

EXHIBIT 9

In The Matter Of:

In Re: W.R. Grace & Co., et al., Debtors

Craig Molgaard, Ph.D.

June 25, 2009

Case No. 01-1139 (JKF)

Martin-Lake & Associates, Inc.

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**VIDEOTAPED DEPOSITION OF
CRAIG MOLGAARD, Ph.D.**

17 On June 25, 2009, beginning at 9:02 a.m., the
18 videotaped deposition of CRAIG MOLGAARD, Ph.D.,
19 appearing at the insistence of Debtors, was taken at the
20 Doubletree Hotel, 100 Madison Street, Missoula, MT,
21 pursuant to Rule 30 of the Federal Rules of Civil
22 Procedure and Rules 7030 and 9014 of the Federal Rules
23 of Bankruptcy Procedure, before Bambi A. Goodman,
24 Registered Professional Reporter, Certified Realtime
25 Reporter, Notary Public.

ABBR E A B A N C E S

Jon L. Heberling, Esq.,
MCGARVEY, HEBERLING, SULLIVAN & MCGARVEY, PC
745 South Main Street
Kalispell, MT 59901
406-752-5566
personally appeared on behalf of Libby
Claimants.

Barbara Harding, Esq., and
Heather A. Bloom, Esq.
KIRKLAND & ELLIS, LLP
655 Fifteenth Street N.W.
Washington D.C. 20005
202-879-5168
personally appeared on behalf of Debtor:
W.R. Grace & Co.

Nathan D. Finch, Esq.,
CAPLIN & DRYSDALE
One Thomas Circle N.W.
Washington, D.C. 20005
202-862-7801

Dale R. Cockrell, Esq.,
CHRISTENSEN, MOORE, COCKRELL, CUMMINGS
& AXELBERG PC
145 Commons Loop Suite 2A
Kalispell MT 59901
406-751-6000
personally appeared on behalf of State of
Montana

Alan B. Rich, Esq.
LAW OFFICE OF ALAN B. RICH
1401 Elm Street Suite 4620
Dallas, TX 75202
214-744-5100
appeared by telephone on behalf of Property
Damage Future Claimants Representative.

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Also Present: Daniel Bell,
CAPLIN & DRYSDALE

Eric Henkel,
CHRISTENSEN, MOORE, COCKRELL,
CUMMINGS & AXELBERG

**Bob Lake, Videographer,
MARTIN-LAKE & ASSOCIATES**

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WITNESS:

CRAIG MOLGAARD, Ph.D., M.P.H.,

Examination by Ms. Harding
Examination by Mr. Finch

EXHIBITS:

Deposition Exhibit No. 1
(NIOSH Publication)

Marked for Identification

marked for identification	8
Deposition Exhibit No. 3 (Epidemiologic Concepts) marked for identification	17
Deposition Exhibit Nos. 4 & 5 (4: Whitehouse Expert Report) (5: Whitehouse Surrebuttal Report) marked for identification	18

Deposition Exhibit No. 6
(Whitehouse 2008 Published Article)
marked for identification 21

Deposition Exhibit No. 7
(Whitehouse 2004 Published Article)
marked for identification 21

**Deposition Exhibit No. 8
(Molgaard 2003 Published Article)
marked for identification**

Deposition Exhibit No. 9 (Descriptive Chart) marked for identification	23
Deposition Exhibit No. 10 (Modification of Exhibit No. 9) marked for identification	28

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1				
2	EXHIBITS:			
3	Deposition Exhibit No. 11 (Markowitz Article) marked for identification	33		1 identification.)
4				2 MS. HARDING: And I'm just going to object
5	Deposition Exhibit No. 12 (Selikoff and Seidman Paper) marked for identification	36		3 to the extent that it's supplementing Dr. Molgaard's
6				4 report. It's not in his expert report. But that said,
7	Deposition Exhibit No. 13 (Handwritten Chart) marked for identification	68		5 if Dr. Molgaard wishes to speak about it today, then I'm
8				6 happy to ask you questions about it and we can talk
9	Deposition Exhibit No. 14 (Mesothelioma Cases with Exposure List) marked for identification	129		7 about it.
10				8 MR. HEBERLING: Yeah. We're giving you
11	Deposition Exhibit No. 15 (King County Summons) marked for identification	131		9 notice of that and, also, notice that he may discuss the
12				10 public health emergency declared for Libby which, again,
13	Deposition Exhibit No. 16 (ATSDR Executive Summary) marked for identification	143		11 happened since the date of his report.
14				12 MS. HARDING: I object to that; it's not in
15	Deposition Exhibit Nos. 17 and 18 (17: Molgaard Expert Report) (18: 11/14/08 Science Advisory Board Conclusion and Enclosures) marked for identification	158		13 his expert report. If you want to supplement his expert
16				14 report and seek leave from the court to supplement his
17				15 expert report to deal with a completely new set of
18				16 issues, then I think you should take that up with the
19	Deposition Exhibit No. 19 (12/12/03 ATS Statement) marked for identification	173		17 court. But, again, if it comes up today in response to
20				18 any of my questions, we'll talk about it then.
21				19 MR. FINCH: I also object to the CDC NIOSH
22				20 information as not being included in his expert report
23	Reporter's Certificate	200		21 because this was information that was available well
24				22 prior to the date he issued his report.
25	* Denotes phonetic spelling			23 EXAMINATION
				24 BY MS. HARDING:
				25 Q Good morning, Dr. Molgaard.
			Page 6	Page 8
1	CRAIG MOLGAARD, Ph.D.,			
2	having been first duly sworn to testify to the truth,			
3	the whole truth and nothing but the truth, testified			
4	upon his oath as follows:			
5	MR. HEBERLING: Before we begin, I'd like			
6	to put on the record that I have, this morning, just a			
7	few minutes ago, delivered to Counsel some recent			
8	compilations by NIOSH regarding asbestosis and			
9	mesothelioma, showing --			
10	MS. HARDING: Jon, I'm going to object to			
11	your characterization. If you want to just tell us that			
12	you're giving it to us and mark it if you'd like, that's			
13	fine. But I don't think you need to characterize it.			
14	MR. HEBERLING: Okay. And so I'd like			
15	to -- do you have exhibit numbers set already?			
16	MS. HARDING: No; we're happy to do it.			
17	MR. HEBERLING: Let's mark this Exhibit 1.			
18	This is a compilation regarding asbestosis and			
19	mesothelioma.			
20	MS. HARDING: If you want to mark it for			
21	purposes of demonstrating you've given it to us, I think			
22	that's fine.			
23	MR. HEBERLING: Yes, for purposes of			
24	notice.			
25	(Deposition Exhibit No. 1 marked for			

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<p>1 actually, let me back up just to be clear.</p> <p>2 The documents that -- all the documents that</p> <p>3 you're -- with the exception of depositions that aren't</p> <p>4 identified in your report, with respect to published</p> <p>5 studies and papers and other documents that you're</p> <p>6 relying upon in connection with your opinions in your</p> <p>7 report, are all of those reliance materials listed in</p> <p>8 your report?</p> <p>9 A I believe they are.</p> <p>10 Q And Exhibit 2, if you could just take a brief</p> <p>11 look at it, that is your expert report in this case; is</p> <p>12 that correct?</p> <p>13 A Yes.</p> <p>14 Q You mentioned that you reviewed some</p> <p>15 depositions. Do you recall what depositions you</p> <p>16 reviewed?</p> <p>17 A Yeah; Moolgavkar, if I'm pronouncing that</p> <p>18 correctly.</p> <p>19 Q Yes, you are.</p> <p>20 A And Ory and Welch, I believe, are the ones.</p> <p>21 Q Okay. Did you review the deposition of -- or</p> <p>22 depositions, there's two, of Dr. Whitehouse in this</p> <p>23 matter?</p> <p>24 A Yeah, I did.</p> <p>25 Q Okay. And did you review the deposition of</p>	<p>1 it?</p> <p>2 A I assume someone from Jon's office; I don't</p> <p>3 know.</p> <p>4 MS. HARDING: Jon, do we have a copy of</p> <p>5 that?</p> <p>6 MR. HEBERLING: I think he's referring to</p> <p>7 documents attached to the Whitehouse report.</p> <p>8 MS. HARDING: Do you know what exhibit it</p> <p>9 is?</p> <p>10 MR. HEBERLING: Well, spreadsheets were</p> <p>11 generally in Exhibit 7.</p> <p>12 MS. HARDING: So I'm just -- since the</p> <p>13 doctor doesn't know what it is, I'm just trying to</p> <p>14 understand if it's something that we have and, if it is,</p> <p>15 what it is so I know -- I mean, you gave it to him. So</p> <p>16 do you know, is it Exhibit 7 from Dr. Whitehouse's</p> <p>17 report?</p> <p>18 MR. HEBERLING: I don't know because I</p> <p>19 don't know what's in his mind. I do know that we</p> <p>20 haven't given him any spreadsheets other than what's</p> <p>21 attached to Dr. Whitehouse's report.</p> <p>22 MS. HARDING: Okay. All right.</p> <p>23 Q (By Ms. Harding) Do you recall how many</p> <p>24 patients were listed on the spreadsheet?</p> <p>25 A I didn't count them; no. There were quite a</p>
Page 10	Page 12
<p>1 Dr. Frank?</p> <p>2 A I believe I did, yes.</p> <p>3 Q Other than the Exhibit 1 and the documents that</p> <p>4 are listed on Exhibit 2, your report, did you review any</p> <p>5 other documents or studies in preparing for your</p> <p>6 deposition today?</p> <p>7 A There were listings of cases from the Libby</p> <p>8 area, a large listings of cases and age and names and</p> <p>9 that sort of thing, date of diagnosis, that I also</p> <p>10 looked at those.</p> <p>11 Q Let's see; do you know if that is a list of</p> <p>12 cases that's been provided by any other expert in the</p> <p>13 case, maybe? I'm just trying to figure out where we</p> <p>14 might have seen it before, if we have.</p> <p>15 A They came to me from Jon, and I don't know who</p> <p>16 else has seen them or --</p> <p>17 Q Okay; what information was on the list?</p> <p>18 A It had -- if I remember correctly, it was like</p> <p>19 a diagnosis, date of diagnosis, age, sex, the names of</p> <p>20 the individuals. It was a very basic sort of</p> <p>21 information about each patient; not many variables, six</p> <p>22 or seven.</p> <p>23 Q So it was a spreadsheet?</p> <p>24 A Yeah, yeah.</p> <p>25 Q And do you know who prepared it, who created</p>	<p>1 few, but I didn't count them.</p> <p>2 Q Okay; was it under a thousand or over a</p> <p>3 thousand, if you recall?</p> <p>4 A I would hate to hazard a guess. I'd be</p> <p>5 guessing how many. I mean, there were numerous pages,</p> <p>6 yeah.</p> <p>7 Q Okay. Why did you review it? What was the</p> <p>8 purpose of reviewing it?</p> <p>9 A I guess it was probably to validate the</p> <p>10 position of Dr. Whitehouse about the number of patients</p> <p>11 he had seen and what -- what diagnosis he thought was</p> <p>12 happening for those patients or he was making for those</p> <p>13 patients. It was really sort of a validation of his</p> <p>14 reports.</p> <p>15 Q Okay. So it was a list that included</p> <p>16 information from Dr. Whitehouse based on his diagnosis</p> <p>17 of those individuals.</p> <p>18 A That was my understanding, basically his</p> <p>19 clinical series that he had done the work on.</p> <p>20 Q All right.</p> <p>21 When were you first retained by the Libby</p> <p>22 Claimants in this case, if you recall?</p> <p>23 A I first -- I believe I first began talking to</p> <p>24 Jon in November or December of last year. And I think</p> <p>25 actual retention was in January or February.</p>

<p style="text-align: right;">Page 13</p> <p>1 Q And have you been deposed before?</p> <p>2 A Yeah.</p> <p>3 Q How many times, to your best recollection?</p> <p>4 A Fifteen or twenty.</p> <p>5 Q Have you appeared as an expert before in</p> <p>6 litigation?</p> <p>7 A Yes.</p> <p>8 Q And have all of your depositions been in</p> <p>9 connection with your being retained as an expert?</p> <p>10 A Yes.</p> <p>11 Q All right. Can you characterize the type of</p> <p>12 expert work that you provided in the past?</p> <p>13 A It's gone on for a while. I initially did some</p> <p>14 work around the swine flu litigation when I was working</p> <p>15 at Mayo Clinic. My chair was deeply involved in that,</p> <p>16 and so I worked with him. And we did consulting work</p> <p>17 around the Justice Department's issues with that series</p> <p>18 of lawsuits. A few other minor cases along the way. I</p> <p>19 did some work with welders in Missouri, that was a</p> <p>20 consultation. And it was, I believe -- I believe it was</p> <p>21 ALS, Lou Gehrig's disease in welders.</p> <p>22 Most of what I did after that was working</p> <p>23 around dietary supplements like Metabolife and Herbalife</p> <p>24 and this sort of stuff where I worked for the companies,</p> <p>25 basically, in the litigation they had against them. It</p>	<p style="text-align: right;">Page 15</p> <p>1 A Uh-huh; yes.</p> <p>2 Q -- and analytic epidemiology is in another</p> <p>3 class; is that correct?</p> <p>4 A Partially. It's -- you have an immediate</p> <p>5 distinction. If you think of it as a taxonomy, okay,</p> <p>6 you have experimental epidemiology and observational</p> <p>7 epidemiology. Those are the two top modes of research</p> <p>8 design.</p> <p>9 Q Right.</p> <p>10 A And then in observational epidemiology, you</p> <p>11 have descriptive epidemiology and analytic epidemiology.</p> <p>12 And within descriptive epidemiology, you have incident</p> <p>13 studies, prevalent studies, correlation studies,</p> <p>14 survivorship studies. And within analytic epidemiology,</p> <p>15 you have case control studies, cohort studies,</p> <p>16 historical cohort studies, like that.</p> <p>17 Experimental epidemiology is clinical trials,</p> <p>18 community trials, behavioral trials, that sort of thing.</p> <p>19 So there's a major distinction between experimental</p> <p>20 epidemiology and observational epidemiology.</p> <p>21 Q Okay. In -- with respect to the distinction</p> <p>22 between experimental epidemiology and observational</p> <p>23 epidemiology, when we're talking about the study of</p> <p>24 chronic diseases --</p> <p>25 A Uh-huh.</p>
<p style="text-align: right;">Page 14</p> <p>1 was a large litigation which went on for years. I was</p> <p>2 involved in something like fifty or sixty cases. And I</p> <p>3 think I was deposed like fifteen or twenty times. As I</p> <p>4 said, I don't remember exactly. That litigation has</p> <p>5 finally come to an end. And basically, I think I</p> <p>6 testified at a Frye hearing two or three times. I think</p> <p>7 I was actually in court two times or three times,</p> <p>8 something like that.</p> <p>9 Q In your report, there are several instances</p> <p>10 when you talk about descriptive epidemiology.</p> <p>11 A Uh-huh.</p> <p>12 Q And I'd like to just kind of explore that a</p> <p>13 little bit to make your sure I understand what you're</p> <p>14 talking about when you use those terms.</p> <p>15 I believe I wrote it down here that you</p> <p>16 described or defined descriptive epidemiology as "a</p> <p>17 study concerned with and designed only to describe the</p> <p>18 existing distribution of variables without regard to</p> <p>19 causal or other hypotheses"; is that correct?</p> <p>20 A Uh-huh.</p> <p>21 MR. FINCH: You have to say "yes."</p> <p>22 THE WITNESS: Yes; sorry.</p> <p>23 Q (By Ms. Harding) And as I understand it, you</p> <p>24 can correct me if I'm wrong, descriptive epidemiology is</p> <p>25 in -- it's one class of epidemiology --</p>	<p style="text-align: right;">Page 16</p> <p>1 Q -- the type of epidemiology that's relevant is</p> <p>2 observational epidemiology; is that right?</p> <p>3 A I guess I would say no, because you can do</p> <p>4 both. You will see large-scale trials in cardiovascular</p> <p>5 epidemiology like MRFIT that is a Multiple Risk Factor</p> <p>6 Intervention Trial which was a failure, but it did</p> <p>7 happen. But there are multiple different kinds of</p> <p>8 behavioral and community kinds of trials that look at</p> <p>9 chronic diseases.</p> <p>10 Q Okay; that's fair enough. And I think I was</p> <p>11 thinking more of when you're studying or attempting to</p> <p>12 understand the impact of potential causative agents or</p> <p>13 carcinogens, most often you're talking about</p> <p>14 observational epidemiology because you can't typically</p> <p>15 expose -- intentionally expose humans to a potential</p> <p>16 carcinogen; right?</p> <p>17 A Not on purpose; right.</p> <p>18 Q Now, in the -- in an article I think that you</p> <p>19 wrote, Epidemiologic Concepts -- actually, I think I</p> <p>20 only have one -- which I'll mark in a second, marked</p> <p>21 Epidemiologic Concepts, and you were the first author</p> <p>22 and Stephanie K. Brodine?</p> <p>23 A Brodine.</p> <p>24 Q Brodine was the second author. In that paper,</p> <p>25 you have a glossary of terms where you define terms.</p>

1 And I just want to read this first -- actually, the 2 second term which is analytic study, and make sure that 3 you still agree that this is a proper definition. 4 It says here that -- "Analytic study, Study 5 designed to examine associations commonly putative or 6 hypothesized causal relationships; usually concerned 7 with identifying or measuring the effects of risk 8 factors or with the health effects of specific 9 exposures; contrast descriptive study which does not 10 test hypotheses." Is that still your understanding of 11 the difference between analytic and descriptive 12 epidemiology? 13 A I believe so, because I think that definition 14 was taken from the second edition of Last, so yeah. 15 MS. HARDING: Okay; let's just mark that as 16 Exhibit 3. 17 (Deposition Exhibit No. 3 marked for 18 identification.) 19 Q (By Ms. Harding) And do you recognize that as 20 the article titled Epidemiologic Concepts that you 21 authored in 1992? 22 A Yes; right. 23 Q And that's the article I was just reading from; 24 correct? 25 A Right.	Page 17	1 MS. HARDING: I think this report does not 2 include all exhibits. It just goes to the end of the 3 page where his signature is; okay? 4 Q (By Ms. Harding) If at any point -- I think we 5 have the exhibits, Dr. Molgaard. So if at any point you 6 need them, feel free to ask me for them. 7 A Okay. 8 Q So on page 15 of the report, under section E, 9 the title is CARD Mortality Study. Do you see that? 10 A Yes. 11 Q Okay. And then in the report, Dr. Whitehouse 12 goes on to describe the CARD Mortality Study. 13 A Right. 14 Q Okay. And that is, with the exception of 15 information that's provided in his May report, his 16 expert report is where -- is the only place where there 17 is information on the CARD Mortality Study; correct? 18 It's not a published study, at least not right now; is 19 that correct? 20 A That's my understanding. 21 Q And if you'll take a look at Exhibit 5, page 17 22 at section E, that's also a description of 23 Dr. Whitehouse's CARD Mortality Study; correct? 24 A Yes. 25 Q And that's with some, I guess you'd say,	Page 19
1 Q Okay. 2 In -- you've reviewed Dr. Whitehouse's reports 3 in this case; correct? 4 A Yes. 5 Q And you are aware that he has filed a report 6 that was issued on December 29th, 2008? 7 A Yes. 8 Q And then he filed another report that was filed 9 in this case on May 15th -- I'm sorry -- May 16th, 2009. 10 A Yes. 11 MS. HARDING: Okay; let's mark the one 12 that -- this as number 4 and this as 5, please. 13 MR. FINCH: December is 4 and May is 5? 14 MS. HARDING: Yes. 15 (Deposition Exhibit Nos. 4 and 5 marked for 16 identification.) 17 Q (By Ms. Harding) If you could look at Exhibit 18 Number 4 which is Dr. Whitehouse's report that was filed 19 in December, then, do you recognize that report? 20 A Yes. 21 Q Okay. If you could turn to page 15 of the 22 report, please. 23 MR. HEBERLING: For the record, Exhibit 4 24 does not appear to be a complete copy because not all 25 exhibits are attached.	Page 18	1 up-dated information from the first report? Is that 2 fair enough? 3 A That would be -- it appears to be that way, 4 yeah. 5 Q Okay. 6 So the first thing I'd like to do, because 7 we're going to, today, I think, talk about several 8 studies or analyses that Dr. Whitehouse has performed. 9 And I just want to make sure that I understand what I 10 think your view of them is. 11 So in connection with the CARD Mortality Study 12 that we just described, that is a descriptive study; 13 correct? 14 A Correct. 15 Q It's a study concerned with and designed only 16 to describe the existing distribution of variables 17 without regard to causation or other hypotheses; 18 correct? 19 A Yes. 20 Q Now, are you familiar with Dr. Whitehouse's 21 Environmental Exposure to Libby Asbestos and 22 Mesothelioma Study that was published in the American 23 Journal of Industrial Medicine in 2008? 24 A Yes. 25 MS. HARDING: We're going to mark that as	Page 20

1 Exhibit Number 6. 2 (Deposition Exhibit No. 6 marked for 3 identification.) 4 Q (By Ms. Harding) And I don't want to talk 5 about it yet, but I've handed you Exhibit Number 6 which 6 is that study. Do you recognize that? 7 A Yes, I do. 8 Q Okay. And this study is also a descriptive 9 study; correct? 10 A Correct. 11 Q And it is -- as such, it is a study concerned 12 with and designed only to describe the existing 13 distribution of variables without regard to causal or 14 other hypotheses; correct? 15 A Yes. 16 (Deposition Exhibit No. 7 marked for 17 identification.) 18 Q (By Ms. Harding) I've marked as Exhibit Number 19 7, Dr. Whitehouse's study that appeared in the American 20 Journal of Industrial Medicine in 2004. And the title 21 is Asbestos Related Pleural Disease Due to Tremolite 22 Associated with Progressive Loss of Lung Function Serial 23 Observations in 123 Miners, Family Members and Residents 24 of Libby, Montana. Do you have a copy in front of you? 25 A Yes, I do.	Page 21	1 your report, is a descriptive study; correct? 2 A Yes. 3 Q And it is a study concerned with and designed 4 only to describe the existing distribution of variables 5 without regard to causal or other hypotheses; correct? 6 A Yes. 7 MS. HARDING: Now, I have a little chart 8 that I started a long time ago that I kind of did from 9 seventh grade biology. And I want to see if I 10 think -- I think I have it right. 11 Well, let me start with this. Let's mark it as 12 Exhibit 9. 13 (Deposition Exhibit No. 9 marked for 14 identification.) 15 Q (By Ms. Harding) First of all, do you kind 16 of -- do you recognize that scientific -- the steps in 17 the scientific method? And have I captured them 18 correctly? 19 MR. HEBERLING: Could I have a copy, 20 please? 21 MS. HARDING: I do not have a copy, I don't 22 think. We could print one at a break. 23 MR. HEBERLING: I think I'd like one now. 24 MS. HARDING: Then we'll take a break and 25 we'll get a copy.	Page 23
1 Q And is that study, Exhibit Number 7, also a 2 descriptive study? 3 A Yes, it is. 4 Q Okay. And it is a study -- I'm sorry -- it's a 5 study concerned with and designed only to describe the 6 existing distribution of variables without regard to 7 causal or other hypotheses; is that right? 8 A That's right. 9 (Deposition Exhibit No. 8 marked for 10 identification.) 11 Q (By Ms. Harding) And the last one I'd like to 12 ask you about -- I think we're on number 8; is that 13 right? 14 Exhibit 8 is an article titled Radiographic 15 Abnormalities and Exposure to Asbestos Contaminated 16 Vermiculite in the Community of Libby, Montana, USA. 17 And I think this appeared in an Environmental Health 18 Perspectives in 2003. Do you see that? 19 A Yes. 20 Q Okay; and do you recognize Exhibit 8? 21 A Yes, I do. 22 MR. FINCH: The Peipins article? 23 Q (By Ms. Harding) The Peipins article; yes? 24 A Yes. 25 Q Okay. And this also, as you've described in	Page 22	1 VIDEO TECHNICIAN: Off the record, the time 2 is 9:31. 3 (Deposition in recess from 9:31 a.m. to 4 9:32 a.m.) 5 VIDEO TECHNICIAN: We're back on the 6 record. The time is 9:32. 7 MR. FINCH: Exhibit 9? 8 MS. HARDING: Yes, Exhibit 9. 9 Q (By Ms. Harding) Dr. Molgaard, I've given you 10 what's been marked Exhibit Number 9 which is titled 11 Scientific Method, Steps in the Scientific Method. And 12 as I mentioned, it, literally, is me trying to kind of 13 put in context, you know, epidemiology in the way that I 14 can learn to -- kind of the scientific method in seventh 15 grade where they talked about putting a, you know, bean 16 in a room and making it dark and putting a bean in the 17 light and seeing which grows. So -- is it fair -- well, 18 do you agree with it, generally? 19 A It's not quite the epidemiologic method. It's 20 a little bit different than what we do; okay? 21 Q Uh-huh. 22 A A lot of what we do is surveillance of 23 populations. And so we start with What is the question? 24 Q Uh-huh. 25 A But -- for example, you have a large	Page 24

<p style="text-align: right;">Page 25</p> <p>1 surveillance system like the SEER system which is for 2 cancer. And it has a number of states and a number of 3 cities in the United States where every case of 4 diagnosed cancer gets entered into a centralized 5 registrar's system, and you identify and follow those 6 cases. So basically what you're doing there is you're 7 generating rates.</p> <p>8 Q Rates of disease in populations?</p> <p>9 A Yeah, yeah.</p> <p>10 Q Right.</p> <p>11 A And so the generation of those rates and the 12 comparison of those rates across states, for example, 13 you know, Does Iowa have more cancer than other places 14 because there's a lot of pesticide and herbicide use 15 there because it's a very agricultural state? So to 16 answer that question you compare the rates there to the 17 rates you get from Washington State, for example. So 18 that -- so that to get to the hypothesis or question in 19 epidemiology, it's not so much that you pluck one out of 20 your mind, okay, though you can do that too, but, 21 really, you look at what's happening in terms of 22 descriptive population surveillance and the rates that 23 are current. And then if you get an excess of rates 24 someplace, then you say Well, what could be driving 25 that? And then that gets you kind of to the developing</p>	<p style="text-align: right;">Page 27</p> <p>1 the -- looking at the rates in one county and looking at 2 the rates in the other and seeing that Boy, this 3 particular state that has a lot of pesticide use seems 4 to have higher rates --</p> <p>5 A Uh-huh.</p> <p>6 Q -- we should investigate that. And they would 7 then use analytic epidemiology to investigate the 8 hypothesis that pesticide use is causing increased risk 9 of disease. Is that right?</p> <p>10 A That's normally the process, yeah.</p> <p>11 Q All right.</p> <p>12 On Exhibit 9, if I marked below the two boxes, 13 I'm going to put "Above Descriptive" and I'm just going 14 to write it down and then you can disagree if I'm wrong. 15 And then below I'm going to put "CARD Mortality" which 16 was Exhibit 3 and 4.</p> <p>17 MS. BLOOM: 4 and 5.</p> <p>18 MS. HARDING: Oh, it was? The reports are 19 4 and 5? I'm sorry. "The Whitehouse Mesothelioma 20 Study," which is Exhibit 6. And the "Whitehouse 21 Progression Study," which is Exhibit 7. And then the 22 "Peipins ATSDR" is that okay for an abbreviation; 23 Exhibit 8? I'll put a box around them so I'm not 24 messing up everything there.</p> <p>25 MR. FINCH: And you'll mark that copy as</p>
<p style="text-align: right;">Page 26</p> <p>1 a hypothesis about what environmental exposures might be 2 happening.</p> <p>3 So, for us, there are kind of -- before you get 4 to design a controlled study, it's the steps around the 5 surveillance which is the descriptive part of our field.</p> <p>6 Q Okay; I think that's very fair. So I think 7 what you're saying is that, really, the -- if I put a 8 box around "observe and develop hypotheses," I think 9 what you're telling me and I think it's very fair, is 10 that there's a huge field of work in public health 11 and -- and -- I'm sorry -- descriptive epidemiological 12 work that goes into collecting the observations --</p> <p>13 A Right.</p> <p>14 Q -- analyzing the observations and developing 15 hypotheses.</p> <p>16 A Right, right.</p> <p>17 Q And then -- and what I wanted to make -- and I 18 think -- I think I do -- I think I do get it. And so in 19 your -- in the analogy you just gave, the descriptive 20 part of the work that's done in your field is the 21 gathering of the SEER data and the comparing of the 22 rates in different places to make observations and 23 develop hypotheses.</p> <p>24 A Uh-huh.</p> <p>25 Q Okay. And so in the example you just gave,</p>	<p style="text-align: right;">Page 28</p> <p>1 the official copy?</p> <p>2 MS. HARDING: Yes. And I'm going to mark 3 this as Exhibit 10; okay?</p> <p>4 (Deposition Exhibit No. 10 marked for 5 identification.)</p> <p>6 Q (By Ms. Harding) Would you agree with that 7 description on the chart?</p> <p>8 MR. HEBERLING: Objection; vague as to what 9 "on the chart" may mean.</p> <p>10 MS. HARDING: Okay.</p> <p>11 Q (By Ms. Harding) As I've just described the 12 four studies that are listed on the chart, Exhibits 4 13 and 5, Exhibit 7, Exhibit -- I'm sorry -- 6, and Exhibit 14 8 as descriptive epidemiology studies that fall under 15 the heading "Descriptive" as I've written it on the 16 chart under Observe and Develop Hypotheses. Would you 17 agree with that, with the qualifications that you just 18 gave before.</p> <p>19 A If I can add another one or two, that -- the 20 thing is, is that, also, when you do -- it's always a 21 question of Compared to what? in epidemiology. So when 22 you do these descriptive studies, you do end up, often, 23 doing an observe-to-expected rate comparison; okay? So 24 you're looking at, you know, asbestosis in Libby or 25 whatever, and then you compare the rates you get there</p>

<p style="text-align: right;">Page 29</p> <p>1 to some other study someplace. And you're trying to 2 come up with, you know, I've observed this many cases, 3 and I would -- based on these other studies which are 4 also descriptive, I would expect this many. And so when 5 you get more than that, that is often used in 6 descriptive studies as an argument point that more 7 studies need to be done or -- or something's going on 8 here in this community; okay?</p> <p>9 Q Okay.</p> <p>10 A Now, an observe-to-expected ratio is still part 11 of, in my mind, is developing a hypothesis and moving 12 towards more analytic work, normally; okay?</p> <p>13 Q Uh-huh.</p> <p>14 A Because you're -- ultimately, your gold 15 standard in -- in observational epidemiology is the 16 cohort design where you do a relative risk. But all 17 these other studies feed into getting to there; okay?</p> <p>18 Q Yes.</p> <p>19 A And they're part of the, as you say here, 20 repeat studies. You know, when you come to a point 21 where you think there really is something going on in a 22 community, it's based on a series of studies that kind 23 of show the same thing going in the same direction. And 24 that's standard. There's never one definitive study. 25 It's a bunch of studies that are kind of moving in the</p>	<p style="text-align: right;">Page 31</p> <p>1 New York State, you know, that sort of argumentation 2 will be included in those papers.</p> <p>3 Q Yes.</p> <p>4 A So they are alluding to etiological theories, 5 although, in and of themselves, they're considered to be 6 descriptive; okay?</p> <p>7 Q Right. And that's very fair. And the fact 8 that those studies -- like Peipins makes those kinds of 9 comparisons and arguments --</p> <p>10 A Yeah.</p> <p>11 Q -- doesn't turn the study into an analytic 12 epidemiology study; correct?</p> <p>13 A No. And really what you're trying to do when 14 you do that sort of thing is you're trying to generate 15 an interest in the field that there should be additional 16 studies in this area.</p> <p>17 Q Right. And, indeed, in Peipins, for instance, 18 Peipins does that very thing in the study.</p> <p>19 A Yeah.</p> <p>20 Q We should study this.</p> <p>21 A Yeah.</p> <p>22 Q And study it doing a controlled epidemiologic 23 study.</p> <p>24 A Right.</p> <p>25 Q Okay.</p>
<p style="text-align: right;">Page 30</p> <p>1 same direction. And then eventually policy makers come 2 to the decision that something is happening in the 3 community.</p> <p>4 Q Okay. But with respect to the four studies 5 that we've talked about earlier, with respect to those 6 studies and what each of those were designed and can 7 do --</p> <p>8 A Uh-huh.</p> <p>9 Q -- they are descriptive studies that are not 10 designed to test hypotheses; correct?</p> <p>11 A In and of themselves, correct.</p> <p>12 Q And the kind of explanation you just gave about 13 looking at descriptive studies and then comparing them 14 to other descriptive studies, that's a separate issue; 15 correct? I didn't ask you in there about any comparison 16 of the studies to anything else. I just asked about the 17 studies. So in other words, if you're going to take a 18 descriptive study and compare it to another descriptive 19 study and, as you said, maybe make arguments about -- or 20 develop a hypothesis about something, that is a separate 21 process; correct?</p> <p>22 A Well, often you'll find in papers of this kind 23 that they do make that comparison. They'll say Well, if 24 we take this -- the numbers we have here and the rates 25 we have here, and compare them to what's happening in</p>	<p style="text-align: right;">Page 32</p> <p>1 I would like to, then, talk a little bit about 2 the CARD Mortality Study and this issue of comparing it 3 to other studies --</p> <p>4 A Uh-huh.</p> <p>5 Q -- okay? And in your report, you state that 6 Dr. Frank found that it was a proper comparison. I 7 might be paraphrasing, but I think that's what you said.</p> <p>8 A In a rough way.</p> <p>9 Q Okay. Did you, yourself, do any work or 10 analysis to try to compare the CARD Mortality Study to 11 any other study?</p> <p>12 A No.</p> <p>13 Q Okay. So when Dr. Whitehouse, in the 14 CARD -- in his report, compares his CARD Mortality Study 15 to the study by Selikoff and Seidman and then makes 16 conclusions based on that comparison, you have not done 17 any analysis to test whether the comparison is proper or 18 the conclusions are proper; is that right?</p> <p>19 A Other than reading the papers, the literature 20 that I was given and thinking about the comparison 21 whether it was a reasonable one or not, I've not done an 22 analysis of my own of things.</p> <p>23 Q Okay.</p> <p>24 A Okay.</p> <p>25 Q So you did read the Selikoff and Seidman paper</p>

<p style="text-align: right;">Page 33</p> <p>1 that Dr. Whitehouse refers to when he compares the CARD 2 Mortality Study to that paper.</p> <p>3 A Yeah.</p> <p>4 Q Okay. And you did read the Markowitz study 5 that Dr. Whitehouse compares his study to.</p> <p>6 A Uh-huh.</p> <p>7 MS. HARDING: Okay.</p> <p>8 Then I'd like to just explore a little bit the 9 similarities and differences between Dr. Whitehouse's 10 CARD Mortality Study and the Selikoff and Seidman paper 11 and Markowitz paper.</p> <p>12 The first thing I'd like to ask is -- let's 13 start with the Markowitz paper. Do you have that?</p> <p>14 Thanks.</p> <p>15 (Deposition Exhibit No. 11 marked for 16 identification.)</p> <p>17 Q (By Ms. Harding) Do you recognize Exhibit 18 Number 11 entitled Clinical Predictors of Mortality for 19 Asbestosis in the North American Insulator Cohort, 1981 20 to 1991?</p> <p>21 A Yes.</p> <p>22 Q One second, I'm just trying to locate -- okay.</p> <p>23 On page 20 -- sorry -- page 25 of Exhibit 24 Number 5 which is Dr. Whitehouse's report --</p> <p>25 A Uh-huh.</p>	<p style="text-align: right;">Page 35</p> <p>1 Q Okay. The first question I want to ask is, is 2 the CARD Mortality Study a subset of a defined study 3 population that has ongoing mortality follow-up work 4 being done on it?</p> <p>5 A I missed the first part of your question.</p> <p>6 You're asking about --</p> <p>7 Q It was asked very poorly, so I'll start over.</p> <p>8 You're familiar with the -- Dr. Selikoff's 9 insulator study; correct?</p> <p>10 A Yes, I am.</p> <p>11 Q It's a famous group of studies; correct?</p> <p>12 A Yes; right.</p> <p>13 Q And he started following an insulator cohort.</p> <p>14 A Right.</p> <p>15 Q Okay. And insulator cohort was defined in a 16 very rigorous -- very rigorous epidemiological 17 procedures; is that fair to say?</p> <p>18 A Yes.</p> <p>19 Q To your knowledge, has Dr. Whitehouse performed 20 that kind of study on his patients at the CARD Clinic?</p> <p>21 A Given his -- I think it is the same category of 22 studies. It's a similar kind of study. But the 23 difference is that Selikoff had a large team and much 24 greater resources, so he could do things that were 25 probably beyond Whitehouse's ability. But the</p>
<p style="text-align: right;">Page 34</p> <p>1 Q -- do you have that?</p> <p>2 A Yeah. Yes, I do.</p> <p>3 Q Okay.</p> <p>4 MR. FINCH: That's the May report?</p> <p>5 MS. HARDING: Yes, it is the May report.</p> <p>6 Q (By Ms. Harding) On page 25, the last full 7 paragraph, through page 28, the first full paragraph, 8 Dr. Whitehouse describes his comparison of the CARD 9 Mortality Study to the Markowitz 1997 study; correct?</p> <p>10 A Right.</p> <p>11 Q Okay. The first thing that I wanted to ask you 12 is, I -- well, I think I'll just go through the study 13 and ask you the questions.</p> <p>14 If you look at Exhibit 11, page 102 of the 15 publication which is the second page, under Methods 16 Study Population and Clinical Examination, do you see 17 that?</p> <p>18 A Yes.</p> <p>19 Q Okay. The first thing it says is "The study 20 population was a subset of the ongoing mortality 21 follow-up of 17,800 asbestos insulation workers (members 22 of the International Association of Heat and Frost 23 Insulators and Asbestos Workers) that has been conducted 24 since January 1, 1967." Do you see that?</p> <p>25 A Uh-huh.</p>	<p style="text-align: right;">Page 36</p> <p>1 general -- the general idea is roughly the same. 2 (Deposition Exhibit No. 12 marked for 3 identification.)</p> <p>4 Q (By Ms. Harding) Do you see the document 5 that's been marked as Exhibit 12?</p> <p>6 A Yes.</p> <p>7 Q And this is a paper by Irving Selikoff and 8 Herbert Seidman; correct?</p> <p>9 A Yes.</p> <p>10 Q And the title is Use of Death Certificates in 11 Epidemiological Studies, Including Occupational Hazards: 12 Variations in Discordance of Different 13 Asbestos-Associated Diseases on Best Evidence 14 Ascertainment. Do you see that?</p> <p>15 A Uh-huh.</p> <p>16 Q If you go to page 484 of the article --</p> <p>17 A Uh-huh.</p> <p>18 Q -- Dr. Selikoff and Dr. Seidman, under 19 Materials and Methods --</p> <p>20 A Uh-huh.</p> <p>21 Q -- list a general description of the way that 22 their insulator cohort study was performed.</p> <p>23 A Uh-huh.</p> <p>24 Q The first paragraph says "On January 1, 1967, 25 there were 17,800 men on the rolls of the International</p>

1 Association of Heat and Frost Insulators and Asbestos 2 Workers in the United States and Canada. They were 3 members of its 120 local unions in different regions." 4 Do you see that? 5 A Yes. 6 Q Okay. Do you understand the description of the 7 17,800 men to be an attempt by Dr. Selikoff and 8 Dr. Seidman to identify all the possible insulators in 9 the US and in Canada who could have potentially been 10 exposed to asbestos in their job as insulators? 11 A Yes. 12 Q Okay. It's true, is it not, that 13 Dr. Whitehouse has not attempted to identify a cohort of 14 individuals in the United States and Canada who could 15 potentially have been exposed to asbestos in Libby; is 16 that correct? 17 A He has not done a cohort mortality follow-up on 18 the national level; that's true. 19 Q Okay. And he hasn't even attempted to identify 20 all the people that could be exposed to asbestos from 21 Libby; correct? 22 A I don't believe he has. 23 Q Okay. So in that regard, the Selikoff cohort 24 is different from the population of patients that 25 Dr. Whitehouse is studying; is that correct?	Page 37	1 close enough? Well, yeah, because there's no real 2 guidelines about when the comparison population is good 3 or not; okay? 4 Q Right. Well, actually, I was going to get to 5 that later. But the bottom line about the comparison is 6 there's -- there are no guidelines for how to do the 7 comparison, and there is no way to test whether it's 8 correct or not; correct? 9 A There's no formal test that I know of, yeah. 10 Q All right. So it also says that the 11 international -- on page number 484 -- well, let me go 12 back. 13 Dr. Whitehouse's patients come to him based 14 on -- because he's a doctor and he treats people for 15 pulmonary disease; correct? 16 A Uh-huh; right. 17 Q And some of the patients have come to him 18 because they've been referred by lawyers or other 19 doctors; correct? 20 A Yes. 21 Q And even within -- well, strike that; we'll get 22 back to that. 23 But in terms of identifying the population of 24 people that have been exposed to asbestos from Libby 25 that was generated in Libby, you would agree with me	Page 39
1 A It's different in terms of -- of where they're 2 finding their material. But basically, they're similar 3 in that what you're looking at is mortality follow-up 4 and clinical correlates of the mortality. And so in 5 that sense -- and you're looking at roughly the same 6 kinds of materials. 7 The difference is, is that what Selikoff was 8 trying to do was to try to simulate -- or emulate a 9 population-based study. And he didn't have a geographic 10 population. What he had instead was everybody in this 11 union; okay? That was his case material. And then he 12 followed them. 13 What Whitehouse has is a bunch of clinical 14 material that has come to his attention that essentially 15 it's a case series, and then he's followed them to see 16 what happens with the mortality experience. So in that 17 sense, where the material has come from is different. 18 And that's why you'll get things like this -- in the 19 Exhibit 5, page 26, where the comparison between the two 20 groups is done by Whitehouse, comparing Markowitz to the 21 CARD study. And they're not -- you know, they're not 22 exactly on exactly the same numbers. But when you do 23 these comparisons, you don't always get, you know, a 24 perfect match when you're doing a comparison; okay? So 25 then you have a value judgment, Are these reasonably	Page 38	1 that the CARD Mortality Study does not attempt to do 2 that; correct? 3 MR. HEBERLING: Objection; asked and 4 answered. 5 THE WITNESS: The question is -- could you 6 repeat that? 7 Q (By Ms. Harding) With respect 8 to -- Dr. Whitehouse did in no way, shape or form, 9 attempt to identify the people in the United States that 10 have been exposed to asbestos that was generated in 11 Libby by Grace; correct? 12 MR. HEBERLING: Same objection. 13 THE WITNESS: Correct. 14 Q (By Ms. Harding) Okay. And, indeed, 15 Dr. Whitehouse has not attempted, even within Lincoln 16 County, to identify the people that have been exposed to 17 asbestos that was generated at the Libby mine; correct? 18 A Correct. What he was looking at was the case 19 material that had come to his practice. 20 Q Okay. And in that regard, it's different from 21 the insulator studies; correct? 22 A It's smaller. I don't know if I would say it's 23 different, per se. I mean, the goal, really, when 24 they're doing the comparison was to see, Okay, what 25 happens with mortality here in terms of this one disease	Page 40

<p style="text-align: right;">Page 41</p> <p>1 or these couple of diseases, and then What are the 2 clinical correlates of it? So the fact that Whitehouse 3 was operating with a case series, there's nothing in the 4 books that says that you can't compare material from a 5 case series that you followed with a case grouping that 6 comes from a large union that's been followed also. I 7 mean, you can compare them.</p> <p>8 And, in fact, in a way, what I think Whitehouse 9 was trying to do was to say saying What's the gold 10 standard for mortality follow-up studies? Well, in 11 Seidman, for this disease, you know, What does my 12 clinical case series -- which is a valid epidemiologic 13 thing to look at, physicians do it all the time -- how 14 does my case series compare to this gold standard, you 15 know.</p> <p>16 Q Okay; let's just move on.</p> <p>17 It says that a questionnaire was sent to each 18 insulator for information including a lifetime smoking 19 history, format consisting with American Cancer Society 20 study, pertinent clinical symptoms, and a limited number 21 of occupational considerations, personal experience with 22 dust counts and industrial hygiene measures. Do you see 23 that?</p> <p>24 A Are we on 484?</p> <p>25 Q I'm on 484 still, at the bottom of the second</p>	<p style="text-align: right;">Page 43</p> <p>1 population in Libby or Lincoln County that was exposed 2 to asbestos from the Grace mine in Libby, Dr. Whitehouse 3 has not attempted to ascertain the death certificates of 4 that group; correct?</p> <p>5 A That's my understanding.</p> <p>6 Q Okay. The only death certificates 7 Dr. Whitehouse has obtained are the death certificates 8 in his group of patients; right?</p> <p>9 A That's my understanding.</p> <p>10 Q In the Selikoff study, it says, on page 485, 11 "The local union officials are then requested by their 12 national office to complete a specific mortality form 13 that includes such information as the facility in which 14 death occurred, treating physicians, next of kin, and 15 other pertinent data. This is supplemented by current 16 records of the Washington office including the most 17 recent mailing address....Inquiry is then directed to 18 all treating facilities (hospitals, extended care units, 19 outpatient clinics) and to all treating physicians 20 requesting clinical data and loan of available chest 21 x-rays." Do you see that?</p> <p>22 A Yep.</p> <p>23 Q Okay. And it's true, is it not, that 24 Dr. Whitehouse has not requested that -- has not 25 attempted to -- well, it's true that Dr. Whitehouse has</p>
<p style="text-align: right;">Page 42</p> <p>1 paragraph under Materials and Methods; actually, the 2 third paragraph.</p> <p>3 A Yes, I see that.</p> <p>4 Q Okay. And to your knowledge, did 5 Dr. Whitehouse or anybody -- did Dr. Whitehouse send out 6 and administer a questionnaire of the sort that was used 7 by the -- by Dr. Selikoff?</p> <p>8 A No, I don't believe he did.</p> <p>9 Q And on the next page, if you turn the page, it 10 says "Since 1967, we have maintained observation of the 11 entire cohort with the assistance of officials of the 12 local unions in the International Office of Union. 13 Whenever a member dies, we are notified often both by 14 the local union and by the health and welfare unit of 15 the Washington office." And that "Sometimes, even such 16 double surveillance may be unaware of the death of a 17 member....Therefore, periodically, we send lists of 18 local union members assumed to be alive...to each local 19 union and request confirmation of current vital status."</p> <p>20 With respect to the population of people in the 21 United States that were exposed to asbestos from Libby, 22 to your knowledge, Dr. Whitehouse hasn't attempted to 23 ascertain the deaths of those people; correct?</p> <p>24 A Right.</p> <p>25 Q Okay. And with respect, even, to the</p>	<p style="text-align: right;">Page 44</p> <p>1 not followed that procedure; correct?</p> <p>2 A I don't believe he has.</p> <p>3 Q Now, going down further, it says "All pathology 4 facilities known or likely to have surgical or autopsy 5 material are also contacted both for information and for 6 permission to borrow histopathological material with, 7 again, generally excellent response. The material 8 received is forwarded to our pathology unit for 9 independent study and then returned with our thanks and 10 acknowledgment of the assistance provided." Now, 11 obviously, Dr. Whitehouse hasn't attempted to do that 12 with respect to the population in the US or Libby that 13 have been exposed to asbestos from the Grace mine in 14 Libby. But you would agree with that; right?</p> <p>15 A Yes.</p> <p>16 Q Okay. It's true, also, that Dr. Whitehouse has 17 not attempted to do that, collect all the pathology that 18 might be available on his patients systematically; 19 correct?</p> <p>20 A On his patients in his case series? I don't 21 really know whether he has or not.</p> <p>22 Q Okay. Is it set out in his -- either his 23 expert report in December of '08 or May of '09 that he 24 attempted to do that?</p> <p>25 A I just don't remember.</p>

<p style="text-align: right;">Page 45</p> <p>1 Q Okay. I mean, my question is -- I understand 2 that there are cases in which Dr. Whitehouse may have 3 pathology information in some of his patient records. 4 A Right.</p> <p>5 Q To your knowledge, has he done -- has he made a 6 systematic attempt to obtain pathology or histological 7 information on his patients that have died?</p> <p>8 A Other than if the material was already in the 9 record, I would say no.</p> <p>10 Q On the bottom of page 486, under Categorization 11 of Causes of Death, Dr. Selikoff and Seidman explain how 12 they conducted their best available information test for 13 determining cause of death. Do you see that?</p> <p>14 A Uh-huh.</p> <p>15 Q Okay. And I'm just going to read what it says. 16 "As a rule, the best available information for 17 establishing the cause of death was considered to be 18 autopsy findings with pathological information derived 19 from surgical intervention next and, in their absence, 20 clinical and roentgenological" -- did I say that right; 21 kind of?</p> <p>22 A Yeah.</p> <p>23 Q -- "observations made during life including the 24 period before death. Where no such details were 25 available, the cause of death as recorded from death</p>	<p style="text-align: right;">Page 47</p> <p>1 approach we used. But the actual algorithm, I've not 2 seen.</p> <p>3 Q And, indeed, I think you read Dr. Whitehouse's 4 deposition; correct?</p> <p>5 A Yes, I did.</p> <p>6 Q And he was asked if there was a written 7 protocol for how he conducted those assessments, and he 8 said no. Do you recall that?</p> <p>9 A I don't remember that exactly, but I think he's 10 right.</p> <p>11 Q Okay.</p> <p>12 Now, coming back to the Markowitz paper, the 13 Markowitz paper which was Exhibit Number 11; correct?</p> <p>14 A Yes.</p> <p>15 Q Which was one of the studies that 16 Dr. Whitehouse attempted to compare it to; correct?</p> <p>17 A Right.</p> <p>18 Q Okay. That -- the cohort that we just 19 described from the Selikoff paper, Exhibit Number 12, is 20 the same cohort; correct?</p> <p>21 A Yeah; it's a subset of it.</p> <p>22 Q Okay. So all of the -- the discussion we just 23 had about the similarities and differences between the 24 Selikoff cohort and the Whitehouse CARD mortality group 25 applies to the Markowitz paper as well; correct?</p>
<p style="text-align: right;">Page 46</p> <p>1 certificate information was utilized; it was then the 2 'best evidence.'" Do you see that?</p> <p>3 A Yes, I do.</p> <p>4 Q In either his report in December or his report 5 in May, has Dr. Whitehouse set out the protocol or study 6 design or method by which he made his best available 7 information judgment?</p> <p>8 A He has, in a sense. Because what the -- what 9 Selikoff is saying is that in the absence of 10 pathological information, clinical material, diagnoses 11 made during life, including the period before death, is 12 an acceptable form of evidence. And then -- so what 13 Whitehouse has done, by and large, I believe, is that he 14 has considered that the clinical diagnoses he made from 15 his practice are reasonable evidence for inclusion in 16 this best available format.</p> <p>17 It's like number three on the list. If you 18 don't have -- if you don't have, you know, autopsy 19 material, then maybe you have clinical and x-ray 20 material made during life as diagnostic material.</p> <p>21 Q But he hasn't -- well, first of all, he hasn't 22 set out the, you know, hierarchy of how he determined 23 what judgments would be made; correct?</p> <p>24 A No, I didn't see it. I mean, I think, really, 25 he just kind of invoked this as This is sort of the</p>	<p style="text-align: right;">Page 48</p> <p>1 A I would say that.</p> <p>2 Q Now, I would like to talk more about the 3 Markowitz paper under the Methods section, starting on 4 page 102. Okay; so the group studied in Markowitz is a 5 subset of the Selikoff insulator population; correct?</p> <p>6 A Right.</p> <p>7 Q Okay. And the -- in July of '81, all surviving 8 insulators from the original cohort who had begun work 9 as insulators thirty or more years previously, were 10 invited to participate in a clinical examination; 11 correct?</p> <p>12 A Right.</p> <p>13 Q Okay. So this Markowitz study started with an 14 attempt by Markowitz and his co-authors to identify all 15 the surviving members of the original cohort of 16 insulators; correct?</p> <p>17 A Right.</p> <p>18 Q And then for various reasons, either they 19 didn't respond or -- I guess it's just that they didn't 20 respond. But at the end of the day they have a final 21 group used in the current study which included 2,609; 22 correct?</p> <p>23 A Yes, that's what they say.</p> <p>24 Q And that actually was 90 percent -- well, let 25 me back up.</p>

<p style="text-align: right;">Page 49</p> <p>1 They contacted the 5,355 surviving members of 2 the insulator group. And they were targeted for 3 examination, clinical examination; correct?</p> <p>4 A Uh-huh, yes.</p> <p>5 Q Okay. And 3,278 did not participate, and that 6 left them with 2,609 who were examined between 1981 and 7 1983; correct?</p> <p>8 A Right.</p> <p>9 Q Okay. In the clinical examination of this 10 group of 2,907 insulators, there are three published 11 papers that describe the methods that were used to 12 examine them; correct?</p> <p>13 A There were three published papers that came out 14 of this. Is that what you're saying?</p> <p>15 Q Well, if you look at the one, two, three, four, 16 five -- look at the fifth paragraph on page 102. It 17 begins "The clinical examination"?</p> <p>18 A Yeah.</p> <p>19 Q It says "The clinical examination that was 20 conducted between 1981 and 1983 included occupational 21 medical history" --</p> <p>22 A Yeah, I see what you're doing; yeah, okay.</p> <p>23 Q It says "The study methods used have been 24 previously described."</p> <p>25 A Right.</p>	<p style="text-align: right;">Page 51</p> <p>1 A Reference 30.</p> <p>2 Q Reference 30; okay. Okay; so you did not 3 have -- or you did not compare the methods of clinical 4 exam that were performed in the insulator studies to the 5 methods of clinical exam used by Dr. Whitehouse; 6 correct?</p> <p>7 A No, I did not.</p> <p>8 Q Okay. And so you don't have any basis for 9 making a judgment about whether or not they were the 10 same; correct?</p> <p>11 A Yes. Since I'm not a pulmonologist, I don't 12 have an opinion.</p> <p>13 Q Okay.</p> <p>14 Do you know, starting on paragraph -- the next 15 paragraph, Pulmonary Function, do you know whether the 16 pulmonary function testing was assessed and conducted in 17 the same way as described in that paragraph and the 18 paragraph below that in the Whitehouse patient 19 population?</p> <p>20 A No, I don't know exactly what was done, in 21 terms of this listing.</p> <p>22 Q Okay. So you don't know whether or not the 23 methods used to identify the pulmonary function of the 24 patients in the CARD Mortality Study were similar to the 25 methods used by the Selikoff study?</p>
<p style="text-align: right;">Page 50</p> <p>1 Q And it cites to, actually, four publications; 2 correct?</p> <p>3 A Right, right.</p> <p>4 Q And those publications are listed in the back 5 of the paper.</p> <p>6 A Right.</p> <p>7 Q Okay.</p> <p>8 A Yes.</p> <p>9 Q References 19, 20, 21, and 22, studies by 10 Lilis -- two studies by Lilis and two studies by Miller. 11 To your knowledge, did the clinical 12 examinations performed by Dr. Whitehouse follow the 13 methods of the clinical examinations done in the 14 insulator studies as described in the studies in notes 15 19, 20, 21, and 22?</p> <p>16 A Could you repeat that, please?</p> <p>17 Q Sure. Well, let me ask you this.</p> <p>18 In connection with your preparation for the 19 deposition or in connection with your preparation for 20 completing your expert report, did you have a chance to 21 review, on page 108, the citations listed at notes 19, 22 20, 21, and 22?</p> <p>23 A No, I did not. The only other reference that I 24 really looked at was reference 30.</p> <p>25 Q I'm sorry; which one?</p>	<p style="text-align: right;">Page 52</p> <p>1 A Some of them, clearly, are of the same. But I 2 think the Selikoff series of studies probably 3 were -- since they were well-funded, they did a much 4 more thorough job, probably.</p> <p>5 Q Okay.</p> <p>6 A I would guess.</p> <p>7 Q In the Whitehouse CARD Mortality Study, there 8 is no information provided with respect to smoking 9 status; correct?</p> <p>10 A In the mortality -- the CARD studies, that's 11 what you're referring to?</p> <p>12 Q Yes.</p> <p>13 A I don't believe there's anything in that.</p> <p>14 Q Okay.</p> <p>15 A Though there was -- smoking status was in the 16 2004 report. I believe there was a brief mention of 17 smoking history.</p> <p>18 Q In the 2004 progression study which involved a 19 separate group of 123 patients; correct?</p> <p>20 A Yeah.</p> <p>21 Q Okay. In this CARD Mortality Study, there was 22 no smoking information that was analyzed or provided in 23 connection with his report on the study; correct?</p> <p>24 MR. HEBERLING: Objection; misstatement of 25 the record.</p>

<p style="text-align: right;">Page 53</p> <p>1 THE WITNESS: I don't remember if -- I 2 don't think there was anything in there on smoking 3 history in the CARD, but I could be wrong on that. 4 Q (By Ms. Harding) Okay. Well, it's fair to 5 say, though, that as described in the 6 Selikoff paper -- well, in the Selikoff cohort and in 7 the Markowitz -- well, let me back up.</p> <p>8 In the Markowitz paper, "Never-smokers were 9 defined as insulators who smoked less than one cigarette 10 per day, had smoked greater than or equal to ten 11 cigarettes per day for greater than six months, or 12 smoked only cigars and pipes, without inhaling. Current 13 smokers exceeded these limits. Ex-smokers also exceeded 14 these limits and had discontinued smoking greater than 15 or less than two years previously." Do you see that 16 paragraph?</p> <p>17 A Yes, I do.</p> <p>18 Q Okay. That kind of smoking information was not 19 assessed or reported in the CARD Mortality Study; 20 correct?</p> <p>21 MR. HEBERLING: Objection; misstatement of 22 the record.</p> <p>23 MS. HARDING: Well, Jon, if -- if you can 24 tell me where that kind of smoking information was 25 reported by Dr. Whitehouse, I'd like to see it, please.</p>	<p style="text-align: right;">Page 55</p> <p>1 say that right? 2 A Yeah. 3 Q "Or smoked only cigars and pipes, without 4 inhaling. Current smokers exceeded these limits. 5 Ex-smokers also exceeded these limits and had 6 discontinued smoking greater than or less than two years 7 previously." Do you see that?</p> <p>8 A Yes, I see it.</p> <p>9 Q Okay. Has Dr. Whitehouse, in connection with 10 your review of the CARD Mortality Study, provided 11 detailed smoking information of the kind described in 12 that paragraph?</p> <p>13 A Not that I am aware of, though I must say that 14 this is an exceedingly funky description of smoking 15 history. I mean, this is clearly something that came 16 back from earlier on in the original study. Because 17 that -- you know, "smoking only cigars and pipes, 18 without inhaling"? I mean --</p> <p>19 Q Fair enough. Let me ask this. It's fair to 20 say that -- would you agree that the -- Dr. Selikoff 21 attempted to ascertain the smoking status of his 22 participants; correct?</p> <p>23 A Given the state of the art at the time, yes, he 24 did.</p> <p>25 Q Okay; given the state of the art at the time.</p>
<p style="text-align: right;">Page 54</p> <p>1 MR. HEBERLING: It's on the spreadsheets. 2 MS. HARDING: Defined as smoked less than 3 one cigarette per day, had smoke greater than ten 4 cigarettes per day for greater than six months, or 5 smoked only cigars and pipes without inhaling? That's 6 on the CARD Mortality Study somewhere in some data. 7 MR. HEBERLING: Your question went to 8 smoking status and other matters.</p> <p>9 MS. HARDING: My question was very 10 specific, and I asked specifically -- I read the 11 paragraph from the Selikoff study and asked if that 12 information was provided in the CARD Mortality Study. I 13 was trying to distinguish it --</p> <p>14 MR. HEBERLING: The record will reflect the 15 question that you posed and the objection I made.</p> <p>16 MS. HARDING: Okay; that's fair enough. So 17 I'll ask it again, just to be clear.</p> <p>18 Q (By Ms. Harding) On page 102, at the top of 19 the page on the second column, there's a paragraph that 20 begins "Never-smokers." Do you see that?</p> <p>21 A Yes.</p> <p>22 Q Okay. And I'm just going to read it. It says 23 "Never-smokers were defined as insulators who smoked 24 less than one cigarette per day, had smoked less than 25 ten cigarettes per day for less than six months." Did I</p>	<p style="text-align: right;">Page 56</p> <p>1 A Yes.</p> <p>2 Q That's fair. And the smoking status of the 3 insulators was known to the Selikoff researchers and was 4 reported in other papers; correct?</p> <p>5 A I believe so.</p> <p>6 Q And the analysis performed by Markowitz in this 7 paper, Exhibit 11, includes an analysis of smoking 8 status; correct?</p> <p>9 A I imagine he put it in there. Yeah, he does 10 have it in there in table 3.</p> <p>11 Q Okay. And there's no such analysis -- similar 12 analysis of smoking in the Whitehouse CARD Mortality 13 Study as reported by Dr. Whitehouse on -- in Exhibit 14 Number 4 and 5; correct?</p> <p>15 A Not that I'm aware of.</p> <p>16 Q Okay. Under the next section, Mortality 17 Follow-up, it says that "The cause of death as listed on 18 the death certificate is categorized by an experienced 19 nosologist." In the CARD Mortality Study, that did not 20 take place; correct?</p> <p>21 A Correct.</p> <p>22 Q And, again, I think we've already covered this, 23 but here in the Markowitz study, "All available medical 24 records, chest radiographs, and histology slides 25 pertaining to the circumstances of death of the</p>

<p style="text-align: right;">Page 57</p> <p>1 individual are obtained if they exist." And in the CARD 2 Mortality Study, it's correct that Dr. Whitehouse did 3 not attempt to make systematic inquiry for all of his 4 patients with respect to those kinds of documents; 5 correct?</p> <p>6 A That's my understanding.</p> <p>7 Q Now, on page 102, in the very last line of the 8 Mortality Follow-up, it says, "An asbestosis death in 9 this study refers to death from parenchymal asbestosis." 10 Do you see that?</p> <p>11 A Yes.</p> <p>12 Q Okay. And what do you understand that to mean?</p> <p>13 A I'm wondering if it means -- if their intent 14 was to say, "interstitial," I believe is the term, 15 asbestosis.</p> <p>16 Q Right.</p> <p>17 A Yeah, I think that's what they're trying to 18 say.</p> <p>19 Q There's a difference between fibrosis in the 20 parenchyma and fibrosis in the pleura; correct?</p> <p>21 A Yes.</p> <p>22 Q Okay. And fibrosis in the parenchyma is 23 typically also referred to as interstitial fibrosis; 24 correct?</p> <p>25 A Right.</p>	<p style="text-align: right;">Page 59</p> <p>1 Q (By Ms. Harding) Dr. Molgaard, just continuing 2 our discussion about the Markowitz paper which is 3 Exhibit Number 11 and one of the papers that 4 Dr. Whitehouse compares his CARD Mortality Study to, it 5 says under Statistical Analysis on page 102, the last 6 paragraph on the right-hand side, that "Mortality 7 follow-up was conducted between the date of examination 8 for each insulator" -- meaning the date of their initial 9 clinical examination; correct?</p> <p>10 A Yes.</p> <p>11 Q -- "and December 31, 1991"; correct?</p> <p>12 A Yes.</p> <p>13 Q Okay. And does -- did Dr. Whitehouse have a 14 specified time period that he used to define the 15 follow-up exercise that he conducted in the 16 mortality -- the CARD Mortality analysis?</p> <p>17 A I don't -- I don't remember what it was. It 18 seems to me that there was a shut-off date, but I don't 19 remember what it was, so --</p> <p>20 Q So he had a shut-off date.</p> <p>21 A Yeah.</p> <p>22 Q Was that -- when was that imposed?</p> <p>23 A You know, I don't -- I just don't remember what 24 the follow-up period was. I have some idea it was 25 thirty-five months of the follow-up, but I could be very</p>
<p style="text-align: right;">Page 58</p> <p>1 Q Okay. And so Markowitz reports that "An 2 asbestosis death in this study refers to death from 3 parenchymal asbestosis."</p> <p>4 A Uh-huh.</p> <p>5 Q That is very different than the definition of 6 asbestos-related disease death as used by Dr. Whitehouse 7 in the CARD Mortality Study; correct?</p> <p>8 A It is different, yeah.</p> <p>9 Q Dr. Whitehouse's definition of a disease 10 that -- I'm sorry -- a death that could be classified as 11 caused by asbestos, included deaths where the individual 12 had only pleural disease as opposed to parenchymal or 13 interstitial fibrosis; correct?</p> <p>14 A Correct.</p> <p>15 MS. HARDING: Oh, three minutes on the 16 tape? Okay. Do you want to take a quick break? He has 17 to change tapes.</p> <p>18 THE WITNESS: Okay.</p> <p>19 VIDEO TECHNICIAN: We're going off the 20 record. The time is 10:28.</p> <p>21 (Deposition in recess from 10:28 a.m. to 22 10:35 a.m.)</p> <p>23 VIDEO TECHNICIAN: We're back on the 24 record. The time is 10:35. This is the beginning of 25 tape two.</p>	<p style="text-align: right;">Page 60</p> <p>1 wrong about that.</p> <p>2 Q So for each patient, there was thirty-five 3 months of follow-up?</p> <p>4 A No, it was uneven amounts of follow-up. They 5 came into his practice at different points in time.</p> <p>6 Q Right. So there was no initial setting of the 7 clinical diagnosis and then subsequent setting of the 8 time that the follow-up would be conducted; correct?</p> <p>9 A It was not a formal statement like this.</p> <p>10 Q Okay. And, indeed, there were people that came 11 in many years ago and some that had come in more recent 12 in the CARD Mortality Study; correct?</p> <p>13 A That was my understanding.</p> <p>14 Q Okay. In descriptive epidemiology, what's the 15 purpose of setting a time period from which you make the 16 initial observation and then setting a time period from 17 which you make the last observation? What's the purpose 18 for doing that?</p> <p>19 A Well, you're always concerned with person, 20 place, and time, in descriptive epidemiology. So what 21 you're trying to say is that during this exact period of 22 time, this is how cases were ascertained. This is how 23 cases were determined, and it's just this period of 24 time; okay? And you can -- you can have a period 25 prevalence or a point prevalence during that period of</p>

<p>1 time --</p> <p>2 Q Uh-huh.</p> <p>3 A -- or you can do the person years thing, which</p> <p>4 they did here in this study, which is the amount of</p> <p>5 observation on any one person; how many years did that</p> <p>6 person contribute to the denominator.</p> <p>7 Q Uh-huh.</p> <p>8 A But you're really trying to be very specific</p> <p>9 about when you have ascertained cases.</p> <p>10 Q Okay. And is the -- is that period of time as</p> <p>11 you've just described, an important feature of a study</p> <p>12 to consider when comparing it to other studies?</p> <p>13 A You mean -- I guess you're asking Does the time</p> <p>14 period -- does it need to be the same amount of time, or</p> <p>15 does it need to be the same place in time?</p> <p>16 Q I'm asking is there a -- if you were -- if</p> <p>17 you're trying to understand the relationship between</p> <p>18 diagnosis of disease --</p> <p>19 A Uh-huh.</p> <p>20 Q -- and death --</p> <p>21 A Uh-huh.</p> <p>22 Q -- and the -- which is what I -- is that what I</p> <p>23 understand the mortality study -- CARD Mortality Study</p> <p>24 to be doing?</p> <p>25 A Yeah.</p>	<p>Page 61</p> <p>1 he says "The most striking observation is that the CARD</p> <p>2 patients' death rate from asbestosis is about three</p> <p>3 times that of the insulators (34 percent to 11</p> <p>4 percent)." Do you see that?</p> <p>5 A Yeah, I remember that.</p> <p>6 Q That's on page 27 of the May report.</p> <p>7 In looking over at the table that</p> <p>8 Dr. Whitehouse reports on page 26, do you see that</p> <p>9 table? I'm sorry; Exhibit Number 5.</p> <p>10 A Page 26?</p> <p>11 Q Uh-huh.</p> <p>12 A Okay.</p> <p>13 Q Okay; it's got Markowitz in the first column --</p> <p>14 A Yeah.</p> <p>15 Q -- and CARD Mortality in the second column.</p> <p>16 A Uh-huh.</p> <p>17 Q And in the first row it says "Mean age at</p> <p>18 examination." Do you see that?</p> <p>19 A Uh-huh.</p> <p>20 Q So if I go to the fifth row, it says</p> <p>21 "Asbestosis deaths as a percent of total deaths."</p> <p>22 A Uh-huh.</p> <p>23 Q And for Markowitz it has 11 percent, and for</p> <p>24 CARD Mortality it has 34 percent.</p> <p>25 A Uh-huh.</p>
<p>Page 62</p> <p>1 Q Is it important to understand -- to have -- if</p> <p>2 you want to compare what you found in the CARD Mortality</p> <p>3 Study to other studies, is it important to have a</p> <p>4 similar number -- I guess start with a similar number of</p> <p>5 person years?</p> <p>6 A It would be a tired comparison if you had a</p> <p>7 similar number of person years. But, really, what</p> <p>8 you're doing -- what you're going to get to in any case</p> <p>9 is you're going to get to rates per hundred thousand per</p> <p>10 million, and then that's your rule, the nexus of your</p> <p>11 comparison is what the rates are doing; okay? So</p> <p>12 it's -- you know, a perfect comparison would have</p> <p>13 this -- you know, both studies would be from 1986 to</p> <p>14 1991. They would both be doing person years; okay? And</p> <p>15 the populations would be exactly the same size; okay?</p> <p>16 But you never get anything like that to work with.</p> <p>17 Q Okay. If I want to -- it seems as -- I've</p> <p>18 tried hard to understand this, so I'm going to see if</p> <p>19 I've got -- if I put "Whitehouse mortality" -- I should</p> <p>20 start a new page.</p> <p>21 I truly am trying to understand this.</p> <p>22 A Uh-huh.</p> <p>23 Q So if I put "Whitehouse CARD Mortality" and I</p> <p>24 put "Markowitz." The bottom line conclusion of -- in</p> <p>25 Dr. Whitehouse's report, seems to me, is on page 27 when</p>	<p>Page 62</p> <p>1 Q That's the comparison -- that's the ultimate</p> <p>2 comparison that Dr. Whitehouse is making, correct, when</p> <p>3 he says that "The CARD patients' death rate from</p> <p>4 asbestosis is about three times that of the insulators";</p> <p>5 correct?</p> <p>6 MR. HEBERLING: Objection; confusing,</p> <p>7 vague.</p> <p>8 Q (By Ms. Harding) Okay; well --</p> <p>9 A Um --</p> <p>10 Q Do you -- do you understand my question?</p> <p>11 A I think I do. That is the basis of the -- of</p> <p>12 the statement that there is a difference of so much</p> <p>13 between the two populations.</p> <p>14 Q He says three times the insulators; correct?</p> <p>15 The death rate is three times that of the insulators.</p> <p>16 A Right.</p> <p>17 Q Right.</p> <p>18 Before asking you more questions about that,</p> <p>19 Dr. Selikoff published numerous analytical epidemiology</p> <p>20 studies on the insulators; correct?</p> <p>21 A Yes.</p> <p>22 Q And we have in those studies, reported standard</p> <p>23 mortality ratios and relative risks of disease in the</p> <p>24 insulators from exposure to asbestos; correct?</p> <p>25 A Right.</p>

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<p>1 Q And, similarly, with respect to the Libby 2 worker cohort in Montana, we have cohort mortality 3 studies that report SMRs; correct?</p> <p>4 A Right.</p> <p>5 Q If you wanted to understand the rates of death 6 among the insulator cohort and the miners exposed to 7 Libby asbestos, would you agree that the best place to 8 look would be to look at those two studies?</p> <p>9 A The two studies being --</p> <p>10 Q Well, the two sets of studies.</p> <p>11 A The Selikoff set of studies --</p> <p>12 Q Yes.</p> <p>13 A -- and then the ATSDR ones?</p> <p>14 Q No, not the ATSDR ones. The studies done by 15 Dr. Amandus and Dr. McDonald on the cohort of workers in 16 Libby, Montana.</p> <p>17 A Well, I would look at all of it, but -- so I 18 would look at Amandus and McDonald and the ATSDR, if it 19 was me.</p> <p>20 Q Okay. And including the ATSDR Mortality Study 21 then.</p> <p>22 A Right.</p> <p>23 Q Okay. For the death rate -- if we're just 24 talking about the workers --</p> <p>25 A Uh-huh.</p>	<p>1 insulators died, including 74" which is 11 percent -- 2 that's in the thing here --</p> <p>3 A Yeah.</p> <p>4 Q -- "whose cause of death was asbestosis"; okay?</p> <p>5 So the 11 percent comes from -- so if I put "Deaths" up 6 here and I put "Deaths for Markowitz is 674"; right?</p> <p>7 A Right.</p> <p>8 Q And 74 are by asbestosis; right?</p> <p>9 A Right.</p> <p>10 Q And for Dr. Whitehouse, it's -- I want to say 11 126 but I want to make sure. It might be 186. It is 12 186. I'm just trying to find the place in the paper 13 where he says that.</p> <p>14 A Page 24 --</p> <p>15 Q Thank you.</p> <p>16 A There's a table All Causes of Death.</p> <p>17 Q "All Causes of Death"; right. Okay. So the 18 table on page 24 reports 186 deaths in the CARD study; 19 correct?</p> <p>20 A Right.</p> <p>21 Q So I'm going to put "186" under "Deaths for 22 CARD," and then the number from asbestosis, 74; is that 23 right?</p> <p>24 A Seventy-six, level 186.</p> <p>25 Q Seventy-six. Okay; and the percent -- I guess</p>
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<p>1 Q -- you get the death rates in the Amandus and 2 McDonald studies --</p> <p>3 A Uh-huh.</p> <p>4 Q -- as well as there's some information in the 5 ATSDR Mortality Study; correct?</p> <p>6 A Yes.</p> <p>7 Q And then in the insulator cohort studies, or 8 the series of studies by Selikoff reporting relative 9 risk and SMRs; correct?</p> <p>10 A Right.</p> <p>11 Q Okay. And you would agree that those groups of 12 studies are analytical epidemiological studies reporting 13 death rates; correct?</p> <p>14 A Yeah, by and large.</p> <p>15 Q Okay. As opposed to the CARD Mortality Study 16 which is a descriptive study attempting to ascertain 17 death rates in the CARD patient population.</p> <p>18 A Right.</p> <p>19 Q Now, going back to this chart on page 26, and 20 looking at the asbestosis deaths as a percent of total 21 deaths, for Markowitz it says 11 percent. And when I 22 look at the Markowitz paper, I think I understand that 23 that number comes from -- if you look at page 103 under 24 Results, the first -- well, I guess it's the second full 25 paragraph, it says "From 1981 to 1991, a total of 674</p>	<p>1 I should put a little line here that says "Percentage." 2 And the percent is 34 for Libby and 11 for Markowitz; 3 correct?</p> <p>4 A Yeah.</p> <p>5 MS. HARDING: Okay. Just so we can talk 6 off the same chart, I'm going to mark this as -- where 7 are we?</p> <p>8 MR. FINCH: 13.</p> <p>9 MS. BLOOM: 13.</p> <p>10 MS. HARDING: And actually, I have 11 "Deaths" -- which are the columns for the numbers 12 percent -- or number asbestosis?</p> <p>13 Q (By Ms. Harding) Is that number asbestosis in 14 that column, is that right, if you look at page 26?</p> <p>15 A It's -- yeah, it's percentage of the total 16 deaths is 34 percent; yeah.</p> <p>17 Q Right; okay. But the number of asbestosis 18 deaths, I guess, is the number for CARD at 76 and for 19 Markowitz it's 74; correct?</p> <p>20 A Yeah.</p> <p>21 MS. HARDING: All right.</p> <p>22 So can you mark that, please?</p> <p>23 (Deposition Exhibit No. 13 marked for 24 identification.)</p> <p>25 Q (By Ms. Harding) So this is Exhibit 13. Just</p>

<p style="text-align: right;">Page 69</p> <p>1 take a look at it. And what I want to ask you about it 2 is the numbers that appear in it.</p> <p>3 A Uh-huh.</p> <p>4 Q And I particularly want to focus on starting 5 with the 674 number in the Markowitz study.</p> <p>6 MR. HEBERLING: Could I take a look at 7 Exhibit 13?</p> <p>8 MS. HARDING: Yes.</p> <p>9 MR. HEBERLING: Thank you.</p> <p>10 Q (By Ms. Harding) Okay. With respect to the 11 674 total deaths in the Markowitz cohort, could you give 12 me your understanding of how that -- what that 13 number -- or how that number was derived?</p> <p>14 A Um --</p> <p>15 Q To the extent that you know.</p> <p>16 A Uh-huh. Well, basically, you start off with 17 the entire 17,800 workers in the International 18 Association of Heat and Frost Insulators and Asbestos 19 Workers. And that began in '67. And the mortality 20 experience, the group, was followed for a couple of 21 decades. They then went back and, in '81, they asked 22 the group to come in for a clinical examination. And 23 they had 5,355 at that point who were asked to come in. 24 Basically they got -- they had a very -- not a very good 25 response rate on the second pass through this cohort.</p>	<p style="text-align: right;">Page 71</p> <p>1 A Right. Because Whitehouse is working with his 2 clinical series, and they are all diagnosed people. So 3 you have folks -- a different sort of procedure going on 4 in terms of how you're identifying people who have died 5 of asbestos. Whitehouse has started with a group of 6 people who are diagnosed with it, and Markowitz has 7 started with a bunch of workers; okay? And they have 8 died of various things. So there's a different approach 9 to finding your deaths.</p> <p>10 Q Right. And you'd agree with me that the rate 11 of death that you get depends entirely on the -- well, 12 depends on two things; one, on the number of deaths that 13 you attribute to, for Markowitz, asbestosis, 14 interstitial fibrosis; correct --</p> <p>15 A Uh-huh.</p> <p>16 Q -- and the number of deaths in the total 17 population; correct?</p> <p>18 A Uh-huh.</p> <p>19 MR. FINCH: You have to say "Yes."</p> <p>20 THE WITNESS: I'm sorry; yes.</p> <p>21 Q (By Ms. Harding) Okay. If Markowitz had 22 limited the number of deaths to only insulators in his 23 group, in his study, that had a diagnosis of 24 asbestos-related disease, the number 674 would be lower; 25 correct?</p>
<p style="text-align: right;">Page 70</p> <p>1 But they managed to get 2,609, and then they added a few 2 more. So they got up to like that amount of folks. And 3 they had 674 deaths out of that group that they were 4 then following which was a subset of the initial group.</p> <p>5 Q Okay. But the -- the deaths -- 674 deaths --</p> <p>6 A Uh-huh.</p> <p>7 Q -- that was the total number of people that 8 died from the original group of 2,609 insulators that 9 were followed in this Markowitz study; correct?</p> <p>10 A I'm actually not sure if the 674 is from just 11 Markowitz or if that is from the initial sample of 12 17,800.</p> <p>13 Q It says -- if you look on page 102, it says 14 "The final group used in the current study included 15 2,609 of the 2,907 insulators."</p> <p>16 A Yeah; right.</p> <p>17 Q And then if you look at --</p> <p>18 A So I guess that's -- that's who they followed.</p> <p>19 Q Right. It says, on page 103, "From 1981 to 20 1991, a total of 674 insulators died."</p> <p>21 A There you go, yeah.</p> <p>22 Q So the total number of deaths, the 674 in the 23 Markowitz study, did not include just deaths of 24 insulators who had been diagnosed with an 25 asbestos-related disease prior to their death; correct?</p>	<p style="text-align: right;">Page 72</p> <p>1 A Yes.</p> <p>2 Q Okay. But you don't -- as far as I can tell, 3 you can't tell how much lower; correct?</p> <p>4 A Correct.</p> <p>5 Q Okay.</p> <p>6 Now, Dr. Whitehouse says in his paper, on page 7 23, it says, "Markowitz does not state the number who 8 were diagnosed with asbestos-related disease on 9 examination in 1981 to 1983." But that is not correct; 10 correct, if you look at page 103?</p> <p>11 MR. HEBERLING: Where was the reference in 12 the Whitehouse report?</p> <p>13 MS. HARDING: Page 23. Actually, that 14 might --</p> <p>15 MR. HEBERLING: Which exhibit are you 16 using?</p> <p>17 MS. HARDING: That's Exhibit 4. Actually, 18 on Exhibit 5 it would be on page 27, the same reference. 19 I'll start over.</p> <p>20 Q (By Ms. Harding) On page 27 of Exhibit 5, 21 Dr. Whitehouse states "Markowitz 1997 does not state the 22 number who were diagnosed with asbestos-related disease 23 on examination in 1981 to 1983." And the reason I 24 facts -- I find that to be incorrect is because on page 25 103, Dr. Markowitz reports that "The prevalence of</p>

<p style="text-align: right;">Page 73</p> <p>1 asbestos in this group of insulators was high. Sixty 2 percent had radiographic opacities characteristic of 3 asbestosis." Do you see that? That's at the very top 4 of the left-hand column.</p> <p>5 A Yeah.</p> <p>6 Q Okay. And he also reports the number of people 7 with pleural abnormalities. Do you see that in the 8 column under table 1, Pleural Abnormalities 9 Absent/Present?</p> <p>10 A I do see that, yes.</p> <p>11 Q Okay. So it's not correct that he didn't 12 report the number of people with asbestos-related 13 disease from their clinical examination; right?</p> <p>14 MR. HEBERLING: Objection; misstates the 15 record.</p> <p>16 THE WITNESS: Well, he says "Sixty percent 17 (1,557) had radiographic opacities characteristic of 18 asbestosis, although only 13 percent of the overall 19 group had radiographic opacities that were rated as 20 profusion categories 2 or 3 on the ILO scale."</p> <p>21 Q (By Ms. Harding) Okay. So you would agree 22 with me that Dr. Markowitz does report the numbers of 23 people in his study that had asbestos-related disease on 24 examination in '81 to '83.</p> <p>25 MR. HEBERLING: Objection; misstates the</p>	<p style="text-align: right;">Page 75</p> <p>1 A I think what you'd want to say is What is the 2 correct denominator?</p> <p>3 Q Yes; thank you. That's a much better way of 4 saying it than I said it.</p> <p>5 A And if you work with what is presented in the 6 Markowitz paper, it says "...although only 13 percent 7 (347) of the overall group had radio" -- as I read 8 earlier -- "radiographic opacities that were rated as 9 profusion categories 2 or 3...." Now, you could use the 10 347 as a denominator, if you wanted to, instead of --</p> <p>11 Q That would be too restrictive in comparing it 12 to Whitehouse, though; correct?</p> <p>13 A I don't know. I mean, if it's -- if you 14 have -- I mean, if you have the -- I guess my point 15 would be that if you use the 347 as a denominator for 16 people who actually had asbestos, what would it do to 17 your percentage? So it might raise it to 20 percent or 18 something like that, if I'm -- if I'm following your 19 logic here.</p> <p>20 Q Okay.</p> <p>21 Now, similarly, with respect to 22 Dr. Whitehouse's 186; okay?</p> <p>23 A Uh-huh.</p> <p>24 Q That is a number that comes -- that's just a 25 function of his patient population; correct?</p>
<p style="text-align: right;">Page 74</p> <p>1 record.</p> <p>2 Q (By Ms. Harding) You can answer.</p> <p>3 A Appears that he reported it.</p> <p>4 Q And from that report, it is clear that not all 5 of the insulators had a diagnosis of asbestos-related 6 disease in their clinical examination; correct?</p> <p>7 A Right.</p> <p>8 Q And what that tells you is that the number 674 9 should be lower. We don't know by how much, but 10 it -- well, it should be lower; correct?</p> <p>11 A Yes.</p> <p>12 Q And that would change the rate of death from 13 asbestosis as reported by -- well, back up. Strike 14 that, please.</p> <p>15 If you wanted to compare the CARD Mortality 16 Study to Dr. Markowitz's study, you need to be comparing 17 apples to apples; correct?</p> <p>18 A It would be useful.</p> <p>19 Q Okay. And if you wanted to make that 20 comparison, then you need to know what the number of 21 deaths from -- I'm sorry -- that the number of deaths 22 that you use in the calculation in Markowitz would have 23 to be limited to the number of deaths of insulators who 24 had been diagnosed with an asbestos-related disease 25 prior to their death; correct?</p>	<p style="text-align: right;">Page 76</p> <p>1 A Yes, it's -- right.</p> <p>2 Q And if there were more deaths in people that 3 had a diagnosis of asbestos-related disease prior to 4 their death that were not in his population, that would 5 affect that number; correct?</p> <p>6 A I'm sorry; could you -- if he had --</p> <p>7 Q I think it goes either way. If he -- if more 8 people happen to come to his practice that had an 9 asbestos-related disease and then died, that number 10 would be higher; correct?</p> <p>11 A Yeah.</p> <p>12 Q Okay. And if less people came to his practice 13 that had asbestos-related disease and died, that would 14 affect the number too; right?</p> <p>15 A Yes.</p> <p>16 Q And, indeed, if I were to go -- if I were to go 17 to Troy, Montana and go to a clinical practice that sees 18 patients, and let's say that they had a hundred patients 19 that had asbestos-related disease and that it turns out, 20 upon examination over the same time period, that all one 21 hundred of them actually died from best evidence of 22 asbestos-related disease, then that would be a hundred 23 percent death rate from asbestosis; correct?</p> <p>24 A That's true.</p> <p>25 Q Okay. And if I went to -- down the road to</p>

1 Helena, and I went to a practice that had people with 2 asbestos-related disease who had also died, and upon 3 examination it turned out that none of the people that 4 had asbestos-related disease had died, then I'd have a 5 zero rate of disease caused by asbestosis; correct? 6 A Right. 7 Q Okay. So the CARD Mortality Study is 8 completely a function of the number of people in 9 Dr. Whitehouse's study; correct? 10 A I don't know if I'd say "completely a 11 function," but -- but it is a proportion of the people 12 he has in his case series who have died of asbestosis. 13 Q Okay. 14 And -- one more -- a couple more questions 15 about Markowitz. Markowitz, after determining -- well, 16 it's fair to say that the Markowitz study was attempting 17 to -- let me start over. 18 Do you consider the Markowitz study to be 19 descriptive epidemiology or analytic epidemiology? 20 A I consider it to be analytic. 21 Q And why is it analytic? 22 A Because they have a cohort that they have 23 followed through time. And they have established what 24 the relative risks are for mortality and done 25 age-adjusted relative risks and 95 percent confidence	Page 77	1 Q The same discussion that we just had relating 2 to Markowitz and the total number of deaths used to 3 calculate percentages in the table reported by 4 Dr. Whitehouse on page 24 applies; correct? 5 MR. HEBERLING: Objection; overbroad. 6 MS. HARDING: I agree. I just wanted to 7 kind of -- maybe I was trying to short-circuit it. 8 Q (By Ms. Harding) Do you agree that in the 9 Selikoff and Seidman study, the ascertainment of the 10 deaths in the insulators was not limited to insulators 11 that had a prior diagnosis of an asbestos-related 12 disease? 13 A Yes. 14 Q Okay. So that the number used to 15 calculate -- the denominator used to calculate the rate 16 of death from asbestosis in the Selikoff and Seidman 17 article is different than the denominator used to 18 calculate the rate of death in the CARD Mortality Study. 19 A Yes. 20 Q Okay. And actually, I should probably ask that 21 of Markowitz because I think it made more sense. 22 The denominator used to calculate the rate of 23 death from asbestosis in Markowitz was determined 24 differently than the denominator used in the CARD 25 Mortality Study; correct?	Page 79
1 intervals. And that's what happens in an analytic 2 study. 3 Q And, indeed, in the Markowitz paper itself, 4 because of the information that's available to 5 Dr. Markowitz, they actually were able to calculate 6 risks -- 7 A Uh-huh. 8 Q -- correct? 9 A Yes. 10 Q Okay. Which -- relative risks. 11 A Right. 12 Q And Dr. Whitehouse's CARD Mortality Study is 13 not capable of doing that; correct? 14 A Right, because everybody is diagnosed with 15 asbestosis; right. 16 Q Okay. 17 Looking at the Selikoff and Seidman article 18 which I think we marked it Exhibit Number 12. I'm 19 sorry. There we go, I'm trying to find Dr. Whitehouse's 20 paper in May. 21 Looking at page 24 of Dr. Whitehouse's May '09 22 report. 23 A That's 5, isn't it? 24 Q Yes, Exhibit Number 5. 25 A Okay.	Page 78	1 A The denominators are different, yeah. 2 Q Okay. And if you use the same methods that 3 Dr. Whitehouse used to determine his denominator in the 4 CARD Mortality Study in both the Selikoff and the 5 Markowitz papers, then their denominators for 6 calculating rate of death would be lower, because you'd 7 be limiting them to only deaths for people that had a 8 prior diagnosis of asbestos-related disease; is that 9 right? 10 A Well, I think if you -- if you limit it to 11 people who have just been diagnosed -- 12 Q If you limit your total number of deaths -- 13 A Right. 14 Q -- to just people who also had been diagnosed 15 prior with asbestos-related disease, then the total 16 number of deaths would be lower. 17 A I don't think so. I think it would go the 18 other way. There would be -- it would be higher. 19 Q You have a total number of deaths in the 20 cohort. 21 A Yeah. 22 Q The 674. 23 A Right. 24 Q And if that total number could only include 25 also people -- I mean, this is the total number of	Page 80

<p style="text-align: right;">Page 81</p> <p>1 deaths. It can't get any higher; right? 2 A Yeah. 3 Q Okay. Then if you limited the ascertainment of 4 that number to include, also, people who had previously 5 had a diagnosis of asbestos-related disease, as we 6 established earlier from Markowitz, we know that they 7 didn't all have an asbestos-related disease. Then it 8 would have to be lower; correct? 9 A Well, if my understanding of the Markowitz 10 paper's correct, and I could be wrong, it looked like 11 there was something like 350 people who had evidence for 12 asbestos; okay? That would then be your denominator. 13 Q Okay. So it would be a smaller denominator. 14 A It would be a smaller denominator, the same 15 number of absolute deaths. 16 Q Yes. 17 A So what that would do is raise the percentage 18 up. 19 Q Raise the rate of death. 20 A Of mortality. 21 Q Yes. 22 A So, for example, I think if you just counted 23 the 370 or whatever it was and that's your denominator, 24 and then you have 74 deaths, as I said earlier, the 25 percentage of deaths would be, you know, 20-some</p>	<p style="text-align: right;">Page 83</p> <p>1 pleural. I mean, they're considered asbestos-related 2 diseases, and there's two kinds. So I'm not sure -- 3 Q Well, I'm not asking you about what's happened 4 subsequently. I'm asking you about what specifically 5 Dr. Markowitz counted in his deaths. And in the 6 paper -- 7 A He counted interstitial. 8 Q -- he counted -- well, he says on page 102, "An 9 asbestos-death in this study refers to death from 10 parenchymal asbestosis"; correct? 11 A Uh-huh. 12 Q So if we limited the numerator in the 13 Whitehouse CARD Mortality Study to just individuals who, 14 upon best evidence, had death from interstitial changes, 15 that would lower Dr. Whitehouse's numerator; correct? 16 A It would, but I think Whitehouse specifically 17 is talking about asbestos-related disease, ARD, when he 18 makes the comparison. I mean, I think he is operating 19 with a broader category that includes both of those. 20 Q Right. He's operating under the -- he's 21 operating under a protocol that allows him to call a 22 death an asbestos-related death, if the person had 23 asbestos interstitial fibrosis or -- 24 A Right. 25 Q -- pleural fibrosis; correct?</p>
<p style="text-align: right;">Page 82</p> <p>1 percent -- 2 Q Right. 3 A -- okay? If you're doing -- which would 4 make -- would be a tighter comparison. But it would 5 leave you with the end result that you're still getting 6 higher mortality with Whitehouse. It would 7 be -- instead of 34 percent to 11 percent, if you try to 8 tighten up your denominator, you're going get 34 to 22 9 percent. 10 Q Okay. 11 A So you would still end up with -- 12 Q According to Dr. Whitehouse's analysis, a 13 somewhat higher in Libby. 14 A An elevated, yeah, ten or 12 percent, probably, 15 something like that. 16 Q Okay. If you then turn to your numerator -- 17 A Uh-huh. 18 Q -- and in Libby the numerator included not only 19 people who Dr. Whitehouse determined died from 20 asbestos by best evidence but also died with pleural 21 disease from best evidence, the numerators between 22 Markowitz and Whitehouse are also different; correct? 23 A I think that a few years ago that they -- NIOSH 24 or somebody decided that they were -- you know, 25 asbestos-related diseases included both interstitial and</p>	<p style="text-align: right;">Page 84</p> <p>1 A Right. 2 Q Whereas Markowitz is operating under a protocol 3 that only allows him to call an asbestos-related death 4 if the individual had parenchymal asbestosis or 5 interstitial fibrosis; correct? 6 A I'm not sure if Markowitz saw any pleural 7 deaths. Or did he? No, we didn't -- we went over that. 8 There were a few in there. 9 Q Well, as I read Markowitz, he -- because, as I 10 understand it they were only counting parenchymal 11 deaths, I can't tell -- I don't know that you can tell 12 if there were or there were not. 13 A If there were others, yeah. 14 Q But you can tell that there were -- if you look 15 at table 1 of Markowitz, it's clear that -- halfway down 16 the table, it's clear that he knew who had pleural 17 abnormalities. If you see there's a column for absent 18 and present. 19 A Uh-huh, yes. 20 Q So he had the ability to count those kinds of 21 deaths, if he had so chosen. But he did not; correct? 22 A That would appear to be the case. 23 Q Okay. So going back to, just to be clear, the 24 numerator from the CARD Mortality Study, if it were 25 limited to deaths by best evidence to only individuals</p>

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<p>1 who had parenchymal asbestosis or interstitial fibrosis, 2 then Dr. Whitehouse's numerator would be lower; correct? 3 A If that was the case. 4 Q Okay. And I believe somewhere in 5 Dr. Whitehouse's report he actually reports the number 6 of people that just had interstitial fibrosis; correct? 7 A I believe he did, yeah. 8 Q Okay. So he says on the bottom of page 19, 9 paragraph three, "Twenty-six percent of those who died 10 of nonmalignant disease died with pure pleural disease 11 with no interstitial fibrosis"; correct? 12 A Uh-huh. 13 Q So if you just use Dr. Whitehouse's own 14 numbers, then you would reduce the numerator in his 15 calculation by 26 percent; correct? 16 A Okay; yeah. 17 Q The -- and you said you reviewed Dr. Frank's 18 deposition. And in that deposition he said -- I just 19 wanted to ask about one thing, if I could find it here. 20 He said with -- it says on page 206 of his deposition 21 which I don't think you have. I'm just going to read 22 this to you and -- we don't have to mark it unless you 23 want to see it. I'm happy to show it to you. He's 24 describing Dr. Selikoff's best methods analysis. 25 A Uh-huh.</p>	<p>1 deaths that he ultimately found were caused by 2 asbestos-related disease for which he relied upon 3 pathology as the best evidence? 4 A Not off the top of my head, no. 5 Q Okay. And you would agree in Dr. Frank's 6 deposition that the individual in the CARD Mortality 7 Study that made that judgment was Dr. Whitehouse; 8 correct? 9 A I believe that's correct. 10 Q Have you had occasion to read any testimony by 11 Dr. Whitehouse regarding his views of pathology 12 evidence? 13 A I may have. I've read a lot of material, so I 14 may have read something, but I don't remember what it 15 was. 16 Q Okay. Do you recall ever reading anything 17 where Dr. Whitehouse characterized his view of pathology 18 evidence? 19 A Not that I remember. 20 Q Okay. 21 You've written in publications regarding the 22 importance of having pathology evidence; correct? 23 A I have, yeah. 24 Q And you've written that it's the -- where you 25 have it, it should be considered the best evidence of</p>
Page 86	Page 88
<p>1 Q And he says "What Dr. Selikoff would do is 2 write the physicians and/or to the hospital, it was 3 usually the hospital where the death occurred, and 4 obtained medical records and ideally obtain pathology. 5 And then Dr. Suzuki, one of the pathologists who was on 6 the staff in the environmental sciences laboratory, 7 would review the tissue, because there were many errors, 8 especially back in the '70s and such were things as 9 mesothelioma weren't as well recognized, and there would 10 be misdiagnoses." And then he goes on. And then at the 11 end of that paragraph he says -- and I can let you read 12 it if you want. I don't think I'm missing anything that 13 matters. But "So, at the end of the day we relied upon 14 the most accurate and experienced pathologic diagnosis, 15 along with the clinical judgment that Dr. Selikoff would 16 bring as he would classify those." 17 Do you know, in the Markowitz studies and in 18 the Selikoff and Seidman study, Exhibits 11 and 12, do 19 you know the -- for the individuals in those studies 20 the -- and for people who died, the number -- the 21 percentage of individuals for which they had pathology 22 evidence? 23 A Not off the top of my head, no. 24 Q Okay. And do you know -- in Dr. Whitehouse's 25 CARD Mortality Study, do you know the percentage of</p>	<p>1 what the disease condition is; correct? 2 A Yes. 3 Q Would it concern you, in your evaluation of the 4 CARD Mortality Study, if you learned that Dr. Whitehouse 5 had rejected pathological evidence of whether or not 6 pleural or parenchymal disease was present in an 7 individual and relied, instead, on his clinical 8 observations? 9 A As an epidemiologist, I would think that he 10 should have relied on the autopsy pathology. 11 Q Do you agree that, as an epidemiologist, that a 12 death rate reflects the number of deaths in a given 13 population per a unit of time? 14 A Yes. 15 MS. HARDING: Want to take a break, another 16 break? 17 THE WITNESS: Sure. 18 VIDEO TECHNICIAN: Off the record, the time 19 is 11:26. 20 (Deposition in recess from 11:26 a.m. to 21 11:34 a.m.) 22 VIDEO TECHNICIAN: We're back on the 23 record. The time is 11:34. 24 Q (By Ms. Harding) Just to finish up on the CARD 25 Mortality Study, Dr. Molgaard, as you indicated at the</p>

<p style="text-align: right;">Page 89</p> <p>1 beginning of the deposition, the CARD mortality study's 2 a descriptive study, and it can't be used to test 3 hypotheses; correct?</p> <p>4 A Right.</p> <p>5 Q There's a statement in Dr. Whitehouse's report. 6 I was trying to locate it. Did I put it away here? 7 Thank you. There's a statement in Dr. Whitehouse's 8 report that on page 25 of his May '09 report, he says 9 the death rate was "higher than even the insulators 10 cohort. It is apparent that exposure to Libby asbestos 11 is considerably more toxic to humans than was the 12 predominately chrysotile asbestos exposure of the 13 insulation workers." Do you see that?</p> <p>14 A Yeah, it's in the second paragraph in the 15 middle there? Right; yeah.</p> <p>16 Q Okay. It's fair to say that that is not a 17 conclusion that has been demonstrated by the CARD 18 Mortality Study from an analytic epidemiological 19 perspective; correct?</p> <p>20 A Correct; he's arguing from a point of view of 21 descriptive epidemiologic.</p> <p>22 Q Okay. And that would be one of those 23 arguments, I think you described earlier, that 24 essentially are the formulation of a hypothesis that in 25 order to be proved, needs controlled epidemiological</p>	<p style="text-align: right;">Page 91</p> <p>1 A I think what he's doing is coming out from the 2 point of view of pulmonology where -- you know, in 3 general, I always think that it's best to have autopsy 4 confirmation. Though, for lung diseases, you may not be 5 in a situation where you need to have that because the 6 diagnosis can be firmed up by the x-rays and by the 7 functioning of the lung itself which you can test with, 8 you know, the spirometry and stuff like this. So I 9 think what he's doing is he's saying, you know, From my 10 point of view, I don't need an autopsy for lung 11 diseases.</p> <p>12 In general, as I said earlier, I believe that 13 autopsy confirmation is very useful. Though, for lung 14 diseases, I could see where it would be harder to do a 15 good autopsy confirmation on that and maybe unnecessary. 16 You know, it's kind of outside of my expertise because 17 it's getting a little bit into pulmonology land here. 18 But he may be right for lung disease.</p> <p>19 I think if you're doing other kinds of things, 20 if you're doing, I don't know, some other disease, it 21 might be much more appropriate to do the autopsy.</p> <p>22 The real bottom line is that it's very hard, 23 often, to get autopsy confirmation. It's hard to get 24 autopsy material for lots of different things. And 25 often you can only get a minor percentage of your cases.</p>
<p style="text-align: right;">Page 90</p> <p>1 analysis, analytic epidemiology, to determine whether 2 it's true or not; correct?</p> <p>3 A It's hypothesis generating, basically, yes.</p> <p>4 Q The -- I'm going to read a statement from 5 Dr. Whitehouse in his deposition in In re Grace, October 6 18, 2007, at 231, line 15, to 232, line 3. I'm not sure 7 if I have it here or not. If you'd like to see it, I 8 can try to look for it. But he's asked the question "I 9 have a couple questions that I would like to ask you 10 relating to autopsies. Typically, why are autopsies 11 performed in medical cases or when people die?"</p> <p>12 A That's a really good question because most 13 physicians, in the general practice of internal medicine 14 or chest disease, we don't even ask for autopsies 15 because we know what they died of. We know more than 16 the pathologist can tell us for the most part. And I 17 really sincerely mean that. We've looked at them and 18 have all the physiologic things. And also autopsies 19 aren't needed. So autopsies generally don't help us 20 very much with the cause of death. We have -- I don't 21 know; you may have some specific questions concerning 22 asbestos and go ahead and shoot on those."</p> <p>23 Do you agree with Dr. Whitehouse's 24 characterization of the relative importance of autopsies 25 in understanding what somebody died from?</p>	<p style="text-align: right;">Page 92</p> <p>1 In any given study you could actually find -- in any 2 given mortality study actually find an autopsy to use. 3 It's difficult. So anyway.</p> <p>4 Q Do you agree, as I think you've stated 5 previously, that rates will vary with the -- rates of 6 disease --</p> <p>7 A Uh-huh.</p> <p>8 Q -- will vary with the intensity with which any 9 population is studied, and histologic confirmation is 10 essential if one is to have confidence when comparing 11 results from one population with another. Do you agree 12 with that?</p> <p>13 A I think, by and large, that is true.</p> <p>14 Q And the reason I ask these questions is because 15 in your report, you're relying -- well, back up.</p> <p>16 You assume, without necessarily even relying, 17 but you assume that Dr. Whitehouse's diagnoses of 18 asbestos-related disease in his patient population and 19 his best evidence judgments in the CARD Mortality Study 20 are accurate; correct?</p> <p>21 A Yes.</p> <p>22 Q Okay. Indeed, you assume that for all of his 23 diagnoses, he follows the criteria for diagnosing 24 asbestos-related disease as set out in the American 25 Thoracic Society; correct?</p>

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<p>1 A I am assuming that, yeah.</p> <p>2 Q Okay. You're assuming that he does the 3 exposure assessment as set out by the applicable ATS 4 guideline at the time of the diagnosis; correct?</p> <p>5 A I'm assuming that.</p> <p>6 Q And you're assuming that he -- in making a 7 diagnosis of an asbestos-related disease, you're 8 assuming that -- in all -- in your statements in your 9 report, you're assuming that he has excluded other 10 causes of disease as required by the ATS; correct?</p> <p>11 A I'm assuming he has done that correctly; yeah.</p> <p>12 Q Okay. And have you been presented by counsel 13 for the Libby Claimants with any documents or testimony 14 from Dr. Whitehouse that he's given in this case -- or 15 that he's provided in this case, where he has admitted 16 and discussed why, in some circumstances, he has not and 17 does not always follow the American Thoracic Society 18 guidelines for diagnosis of disease? Have you seen any 19 of that in his testimony?</p> <p>20 MR. HEBERLING: Objection; misstatement of 21 the record.</p> <p>22 Q (By Ms. Harding) You can answer if you 23 understand.</p> <p>24 A I'm not sure if I've seen a discussion of his 25 not following the guidelines. I may have, I just don't</p>	<p>1 A No.</p> <p>2 Q Okay. In any of the documents that you've 3 seen, did you happen to see anything that delineated 4 where the patients were from?</p> <p>5 A I don't remember seeing anything like that.</p> <p>6 Q And do you have any knowledge of whether there 7 are patients in the 1,800 of Dr. Whitehouse's population 8 that come from places other than Spokane and Lincoln 9 County?</p> <p>10 A I imagine there probably are.</p> <p>11 Q Okay.</p> <p>12 A I don't know the exact numbers or whatever, 13 but -- I haven't seen a distribution list, but I would 14 imagine that some of them are.</p> <p>15 Q Okay. So it's fair to say that not all of the 16 individuals in Dr. Whitehouse's patient population come 17 from Lincoln County; correct?</p> <p>18 A I would think that's probably safe to say.</p> <p>19 Q Or currently reside in Lincoln County.</p> <p>20 A I would think that's probably safe to say.</p> <p>21 Q We talked briefly earlier about -- I don't know 22 how much you know about the Grace operation of the mine 23 in Libby, Montana. But are you aware that Grace mined 24 vermiculite in Libby, Montana?</p> <p>25 A Yes.</p>
<p>1 remember it.</p> <p>2 Q Okay. I was just trying not to cover something 3 that he was going to cover so you have to discuss it 4 twice.</p> <p>5 A Uh-huh.</p> <p>6 Q Dr. Molgaard, what's your understanding of the 7 geographic distribution of the patients in 8 Dr. Whitehouse's -- well, let's start with his patient 9 population. Do you have an understanding of how many 10 patients are in his -- how many patients he has?</p> <p>11 A I have a -- yeah.</p> <p>12 Q And what is that?</p> <p>13 A I believe I was told that there were 1,800.</p> <p>14 Q Okay. And of those 1,800, do you have an 15 understanding of, geographically, where they come from?</p> <p>16 A My belief is that they are mainly from Lincoln 17 County.</p> <p>18 Q Okay. Is it your -- because I took from your 19 report that you believed that all of his patients were 20 from Lincoln County. Is that what you believe to be 21 true?</p> <p>22 A No. I think there are some that are from 23 Spokane, I believe.</p> <p>24 Q Okay. And other than -- and do you know how 25 many are from Spokane?</p>	<p>1 Q And are you aware that it was milled in 2 Libby -- milled in Libby and then into what's often 3 called concentrate?</p> <p>4 A Yes.</p> <p>5 Q And that concentrate was, then, shipped by rail 6 car, either in bags or in big, you know, rail cars --</p> <p>7 A Uh-huh.</p> <p>8 Q -- to many different locations all over the 9 country. Are you aware of that?</p> <p>10 A Yes. I believe over 200 sites it was shipped 11 to, yeah.</p> <p>12 Q Okay. So I just want to ask you a few 13 questions about -- about that. Hypothetically, if there 14 is an individual in Libby who is loading on the 15 vermiculite concentrate to a rail car, either by dumping 16 it or handling bags onto a car and they're exposed; 17 correct?</p> <p>18 A Right.</p> <p>19 Q Okay. That rail car goes across the country 20 and, let's say, it goes to Boston --</p> <p>21 A Right.</p> <p>22 Q -- and it ends in Boston. And there's a person 23 in Boston who then takes the vermiculite out of the rail 24 car, either in bags or somehow or another helps to dump 25 it into something else and transports it to somewhere;</p>

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<p>1 correct?</p> <p>2 A Right.</p> <p>3 Q Okay. If, hypothetically, the person in Libby</p> <p>4 developed an asbestos-related disease from that</p> <p>5 exposure; okay --</p> <p>6 A Uh-huh.</p> <p>7 Q -- any of them; meso, lung cancer, asbestosis,</p> <p>8 pleural disease.</p> <p>9 A Right.</p> <p>10 Q As an epidemiologist -- strike that.</p> <p>11 If the person in Libby that was loading the</p> <p>12 concentrate onto the rail car developed an</p> <p>13 asbestos-related disease from the handling of the</p> <p>14 vermiculite concentrate onto the rail car, and the</p> <p>15 individual in Boston developed an asbestos-related</p> <p>16 disease from his handling of the taking off of the</p> <p>17 vermiculite concentrate from the rail car in Boston,</p> <p>18 from an epidemiological standpoint, would there be any</p> <p>19 reason to believe that the asbestos-related disease that</p> <p>20 was contracted by the two gentlemen would be a different</p> <p>21 disease? I maybe asked -- let's say it was</p> <p>22 mesothelioma. If the gentleman in Libby contracted</p> <p>23 mesothelioma from that exposure to concentrate and the</p> <p>24 gentleman in Boston contracted mesothelioma from his</p> <p>25 exposure to that concentrate that ended up in Boston,</p>	<p>1 disease that you ultimately get is going to be the same</p> <p>2 disease; correct?</p> <p>3 A Right. The only thing, it might be -- the</p> <p>4 progression has spread. Might be -- could possibly be</p> <p>5 faster in Libby if there's a more concentrated exposure.</p> <p>6 That's a hypothetical.</p> <p>7 Q Right; that's a hypothesis that you would agree</p> <p>8 hasn't been tested.</p> <p>9 A Right.</p> <p>10 Q To the extent that it's been tested with</p> <p>11 analytical epidemiology, you would look to the Amandus</p> <p>12 and McDonald study and the mortality study for -- well,</p> <p>13 actually, I -- well, I would say the Amandus and</p> <p>14 McDonald study because you have some understanding of</p> <p>15 levels of exposure in that study.</p> <p>16 A Some. But I would look at the ATSDR stuff too.</p> <p>17 Q Okay; the ATSDR Mortality Study?</p> <p>18 A Yeah.</p> <p>19 Q Okay.</p> <p>20 To get back to the hypothetical, the point</p> <p>21 you're making is that if you're exposed -- let's say</p> <p>22 you're exposed to, you know, a hundred fibers. This</p> <p>23 would be true whether you were in Libby or somewhere</p> <p>24 else; correct?</p> <p>25 A Uh-huh.</p>
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<p>1 would you expect the mesothelioma to be different</p> <p>2 mesothelioma?</p> <p>3 A Normally, no, but the environmental exposures</p> <p>4 would be different. Because the guy loading the stuff</p> <p>5 onto the train in Libby would, undoubtedly, have more</p> <p>6 exposures than just the loading of. Because he's living</p> <p>7 in this town where this stuff's all over and there's</p> <p>8 clouds of dust and all this.</p> <p>9 Q Right.</p> <p>10 A The guy in Boston, in theory, is just picking</p> <p>11 up a bag and dropping it. So maybe that could cause a</p> <p>12 different type of disease pattern, I don't know, because</p> <p>13 the exposure is stronger. Maybe you get more or faster</p> <p>14 problems in Libby.</p> <p>15 Q So that the -- you're hypothesizing that it's</p> <p>16 possible that if -- and your premise is that it is the</p> <p>17 level of exposure; correct?</p> <p>18 A Yeah.</p> <p>19 Q Because we can agree that the stuff is the same</p> <p>20 stuff.</p> <p>21 A Yeah; right, right.</p> <p>22 Q And from a toxicologically, epidemiologically,</p> <p>23 everything we know in science, there's no reason to</p> <p>24 think that the stuff -- if you're exposed to the same</p> <p>25 stuff in Boston as you're exposed to in Libby, the</p>	<p>1 Q If you were in Boston and you happened to be</p> <p>2 the person that takes the stuff off the cart every day,</p> <p>3 and you're exposed every day for forty years, you might</p> <p>4 have a different rate of how fast you might develop the</p> <p>5 disease than the guy that just worked there for two days</p> <p>6 or the guy that worked there for just a year; correct?</p> <p>7 A Right.</p> <p>8 Q And did the same thing; right?</p> <p>9 A Right.</p> <p>10 Q Okay. So the fact that you might get it faster</p> <p>11 is dependent upon the level of the exposure; correct?</p> <p>12 A Partially it's that, and partially, you know,</p> <p>13 one of the arguments has been made is that the fiber</p> <p>14 from Libby is different and it causes a different kind</p> <p>15 of asbestosis. I'm not an expert in that area at all,</p> <p>16 but that's something that, I think, that has been talked</p> <p>17 about in some of the literature.</p> <p>18 Q No, no, and I totally understand you're talking</p> <p>19 there about the differences between chrysotile and</p> <p>20 amphibole asbestos or tremolite asbestos or whatever you</p> <p>21 might want to call the asbestos at Libby.</p> <p>22 A Uh-huh.</p> <p>23 Q But I'm asking you, I think, a different</p> <p>24 question which is that I want you to assume that they're</p> <p>25 exposed to the exact -- to the Libby fibers, whatever</p>

<p style="text-align: right;">Page 101</p> <p>1 they are.</p> <p>2 A Okay.</p> <p>3 Q And the fact that they're exposed in Libby and 4 the fact that they're exposed in Boston doesn't change 5 the biological consequences of the exposure, whatever 6 the level of it is; correct?</p> <p>7 A Right; but I would -- I'm assuming that the guy 8 in Libby is exposed more because there's just more of it 9 in the environment than the guy in Boston.</p> <p>10 Q Okay.</p> <p>11 A You know, that's all.</p> <p>12 Q But -- but you understand that there 13 are -- there were expansion plants all over the country; 14 correct?</p> <p>15 A Yes.</p> <p>16 Q And you understand that people worked with that 17 concentrate --</p> <p>18 A Yeah.</p> <p>19 Q -- on a daily basis in other places; correct?</p> <p>20 A Yeah.</p> <p>21 Q Okay. And so -- and you understand that it's 22 certainly possible that there would be individuals in 23 other locations in the country that would have exposures 24 that are even higher than individuals environmentally 25 exposed in Libby; correct?</p>	<p style="text-align: right;">Page 103</p> <p>1 A Yeah.</p> <p>2 Q Okay. Do you understand that there have been 3 exposure measurements of individuals working 4 in -- exposed to concentrate in expansion plants around 5 the country?</p> <p>6 A I didn't know. I'm glad to hear.</p> <p>7 Q Actually, I think that is it's fair to say from 8 the Lockey study that there definitely are some.</p> <p>9 A Are some, yeah.</p> <p>10 Q At least. And do you know, have you followed 11 and have you reviewed, any of the publications from the 12 EPA or the ATSDR about the exposure levels 13 of -- environmental exposures in Libby or exposures in 14 other places around the country to concentrate?</p> <p>15 A I've read documents about the Libby exposure 16 levels, but I've not read about other sites.</p> <p>17 Q Okay. But it's fair to say, as I understand 18 your testimony, that you have not analyzed the available 19 exposure data relating to Libby vermiculite; is that 20 fair?</p> <p>21 A That's correct.</p> <p>22 Q So you do not know, one way or the other, 23 whether exposures in Libby, environmentally, may or may 24 not be comparable to exposures that another person in 25 another part of the country might get to the same</p>
<p style="text-align: right;">Page 102</p> <p>1 A I'm not sure if I agree with the last. You 2 know, it depends on, you know, are you extracting the 3 stuff? Are you processing it? Are you involved in both 4 of those things in Libby? I just tend to think that -- 5 although the stuff that gets shipped out, I'm unclear 6 what goes out to these -- or what did go out to these 7 200 other plants; okay? How far down the processing 8 chain was that? Was it all bags of pellets? You know, 9 I just don't know; okay?</p> <p>10 Q Okay.</p> <p>11 A So you might have a situation with people that 12 were at these 200-plus sites, wherever they are, are 13 dealing where a lot of the dust has been rubbed off, for 14 lack of a better expression. It might be a cleaner 15 product and exposure when they are receiving it and 16 taking the bag off the train in Boston. I just don't 17 know.</p> <p>18 Q Okay; you don't -- you don't know; right?</p> <p>19 A I do not know.</p> <p>20 Q And what I'm trying to get to, because -- I 21 mean, you understand that there are -- let me back up.</p> <p>22 Q Do you know that there are over 4,000 23 industrial hygiene samples of exposure -- individual 24 exposure measurements of the workers at Libby? Do you 25 understand that from the documents you've read?</p>	<p style="text-align: right;">Page 104</p> <p>1 A concentrate; correct?</p> <p>2 A I think -- for me, at least, the thing about 3 Libby is that it's kind of -- it's sort of a double or 4 triple jeopardy thing; okay? Because since the mine is 5 right there, it's not only an exposure for workers who 6 are dealing with the stuff, it's a general possibility 7 of exposure because of the -- what's in the air, in the 8 town, what's in the soil, what's in the water. You 9 know, I mean, and then in these other processing plants 10 I'm not sure if there is a double or triple jeopardy 11 situation going on. But once again, I don't know.</p> <p>12 Q You don't know; okay. And I think I'm really 13 not -- I'm not really, I think -- I'm not -- I'm not 14 intending to, really, at this point in time, kind of 15 challenge your notion that it -- there might be higher 16 exposures in Libby, environmentally, than there might be 17 in other places. I'm not really asking that question. 18 I'm more asking the question that if you are exposed to 19 Libby vermiculite concentrate that is the same 20 material --</p> <p>21 A Uh-huh.</p> <p>22 Q -- in both -- in either Libby or, again, in 23 Boston, and you're exposed to enough that's sufficient 24 to cause an asbestos-related disease --</p> <p>25 A Uh-huh.</p>

<p style="text-align: right;">Page 105</p> <p>1 Q -- okay, so that you get it, you get the 2 disease -- so whether you got it faster or slower than 3 somebody else, you get the disease -- what I'm asking 4 you, I think it's just basic biology, that the disease 5 itself, if it's mesothelioma, for instance, is the same 6 disease; correct?</p> <p>7 A All other things being constant, yes; okay?</p> <p>8 Q Okay.</p> <p>9 A Like if the environmental exposures and 10 domestic exposures in Boston are the same as they are in 11 Libby and it's meso? Meso's meso.</p> <p>12 Q I'm just asking you to assume that whatever the 13 exposures were to the stuff, they were sufficient to 14 cause the mesothelioma; right?</p> <p>15 A Yeah.</p> <p>16 Q Okay. So that way you don't have to kind of 17 make any --</p> <p>18 A Caveat.</p> <p>19 Q -- assumptions about what it is. That the 20 disease, mesothelioma, is ICD-9 code, whatever it is --</p> <p>21 A Right.</p> <p>22 Q Is the same disease that you get in Boston, the 23 same ICD-9 code for mesothelioma; correct?</p> <p>24 A I would assume for meso that that would be 25 true.</p>	<p style="text-align: right;">Page 107</p> <p>1 Q Do you understand what I mean by that?</p> <p>2 A Uh-huh, yes.</p> <p>3 Q Okay. And there have been -- it's been 4 hypothesized in the literature for many years that there 5 is a difference in toxicity between amphibole asbestos 6 and chrysotile asbestos; correct?</p> <p>7 A Correct.</p> <p>8 Q Okay. And are you aware of that literature?</p> <p>9 A I've read some of that, yes.</p> <p>10 Q Which literature have you read on that topic, 11 if you recall?</p> <p>12 A I don't remember the cites right now, but I 13 have read some of them.</p> <p>14 Q Okay. Have you read the study by -- performed 15 by Hodgson and Darnton?</p> <p>16 A It does not ring a bell right now.</p> <p>17 Q Okay. Have you read -- well, what's your 18 recollection of the literature that addresses the topic 19 of toxicity of asbestos?</p> <p>20 A In terms of the types of fibers?</p> <p>21 Q Yes.</p> <p>22 A They're -- they're rather different. And the 23 amphiboles, as I understand it, is smaller, sort of 24 sharper, if you will, and that -- and it seems to be 25 indicated with pleural problems rather than</p>
<p style="text-align: right;">Page 106</p> <p>1 Q For lung cancer, if you get a lung cancer 2 that's caused by exposure to asbestos from Libby in 3 Libby, it's the same, you know, ICD-9 code for lung 4 cancer as it would be if you got lung cancer in Boston 5 after sufficient exposure to Libby vermiculite; correct?</p> <p>6 A Yes.</p> <p>7 Q Okay. And the same is true for asbestosis?</p> <p>8 A There I don't know.</p> <p>9 Q You don't know if there's --</p> <p>10 A I'm not sure whether it's the same -- if it's 11 Libby vermiculite, it should be doing the same disease 12 process for all three.</p> <p>13 Q Right. That's all -- that's the only thing I'm 14 asking you. I'm not asking you about whether 15 the -- whether Libby vermiculite might somehow be 16 different than -- in terms of inducing disease -- than 17 chrysotile asbestos or any other kind of asbestos. I'm 18 just asking that once the person gets the disease, if 19 they get it in Boston or Libby, if it's caused by Libby 20 vermiculite, it's the same disease.</p> <p>21 A It should be, yeah.</p> <p>22 Q Now, in -- you mentioned this issue of what I 23 typically refer to as toxicity of asbestos. Does 24 that -- does that make sense to you?</p> <p>25 A Yeah.</p>	<p style="text-align: right;">Page 108</p> <p>1 interstitial. And it seems to be that it's much more 2 difficult to clear it than the other types of fibers.</p> <p>3 Once you -- once you have some in your lungs, it 4 basically is going to stay there for a very long period 5 of time.</p> <p>6 Q Okay. And what studies are you relying -- do 7 you recall reading that were making those hypotheses?</p> <p>8 A You know, I just don't remember the cites on 9 that, because that was sort of general background 10 reading for me. I don't remember the references.</p> <p>11 Q Okay.</p> <p>12 In your expert report, you seem to take issue 13 with some fairly sophisticated toxicity analysis 14 performed by Dr. Moolgavkar?</p> <p>15 A Uh-huh.</p> <p>16 Q Do you recall what I'm talking about?</p> <p>17 A Yeah, I do.</p> <p>18 Q And the first, I believe, perhaps the only 19 thing -- let me look real quickly. Dr. Molgaard's 20 report. Sorry.</p> <p>21 Well, actually, the first question I have is 22 the -- Mr. Heberling was provided with a copy of the 23 Sullivan data. Have you received that and have you 24 analyzed that data?</p> <p>25 A I've not analyzed it.</p>

<p>1 Q Okay; but you do have it?</p> <p>2 A I don't think I -- if I do, I don't know that I</p> <p>3 do.</p> <p>4 Q Okay. So you have not -- well, do you recall</p> <p>5 being told by Mr. Heberling that he had received it and</p> <p>6 that he was going to provide it to you?</p> <p>7 A I remember there was some discussion about</p> <p>8 getting it, I believe, between the attorneys. I think</p> <p>9 Jon was trying to get it or hadn't received it or</p> <p>10 something like that. That's about all I know about it.</p> <p>11 Q Okay. So -- so you either haven't received it</p> <p>12 from Mr. Heberling or, if you have, you haven't reviewed</p> <p>13 it and analyzed it; correct?</p> <p>14 A No. There was a Sullivan paper I looked at.</p> <p>15 Q The published Sullivan paper.</p> <p>16 A Yeah, but that's it.</p> <p>17 Q You mention that -- with respect to Sullivan,</p> <p>18 that the close of data was end of 2001. And then you</p> <p>19 indicate that there were -- since that time, there have</p> <p>20 been other diagnoses of asbestos-related disease;</p> <p>21 correct?</p> <p>22 A Right.</p> <p>23 Q Okay. You understand that Sullivan was a</p> <p>24 follow-up mortality study to the original NIOSH and</p> <p>25 Amandus studies done in the early '80s; correct?</p>	<p>Page 109</p> <p>1 A Um --</p> <p>2 Q Well, let me ask you the other way. It would</p> <p>3 be improper to add cases to the Sullivan data set</p> <p>4 without conducting the formal follow-up analysis that</p> <p>5 would include new person years and the correct general</p> <p>6 population and Montana population data and whatever else</p> <p>7 goes into doing that kind of analysis that I'm not sure</p> <p>8 I know.</p> <p>9 A It would be best if it was a new study, because</p> <p>10 a lot of parameters will change, yeah.</p> <p>11 Q Not just the number of new cases. Other</p> <p>12 parameters change as well.</p> <p>13 A Right.</p> <p>14 VIDEO TECHNICIAN: We're going off the</p> <p>15 record. The time is 12:10.</p> <p>16 (Deposition in recess from 12:10 p.m. to</p> <p>17 12:11 p.m.)</p> <p>18 VIDEO TECHNICIAN: We're back on the</p> <p>19 record. The time is 12:11.</p> <p>20 Q (By Ms. Harding) So Dr. Molgaard, with respect</p> <p>21 to the toxicity analysis performed by Dr. Moolgavkar, I</p> <p>22 think that the only criticism that I believed that you</p> <p>23 had in your paper, related to the fact that you believe</p> <p>24 that the exposure data that was originally collected by</p> <p>25 NIOSH and Dr. Amandus was not reliable for this type of</p>
<p>Page 110</p> <p>1 A I do understand that.</p> <p>2 Q And as such, I think like studies you have</p> <p>3 conducted and other people conduct, when you do a</p> <p>4 follow-up study, you have to have a date by which you</p> <p>5 cut off the data that you're going to analyze; correct?</p> <p>6 A Right; data collection stops here.</p> <p>7 Q Okay. And you, indeed, in this cohort of</p> <p>8 workers at the mine in Libby, you would expect there to</p> <p>9 be continued cases in that group; correct?</p> <p>10 A Uh-huh; yes.</p> <p>11 Q Okay. And if you wanted to analyze the rates</p> <p>12 of disease in light of the new cases, you would do</p> <p>13 another follow-up study where you would analyze that</p> <p>14 data; correct?</p> <p>15 A Ideally, yes.</p> <p>16 Q Okay. Because not only would the -- would you</p> <p>17 not only include the new cases, you'd have to include</p> <p>18 the new person years by the study and the general</p> <p>19 population and mortality rates of the appropriate time</p> <p>20 period; correct?</p> <p>21 A Correct.</p> <p>22 Q Okay. So to the extent that Dr. Moolgavkar did</p> <p>23 not use the new data in his analysis of the Sullivan</p> <p>24 data, you would agree that that would be proper;</p> <p>25 correct?</p>	<p>Page 112</p> <p>1 calculation; is that correct?</p> <p>2 A Yeah. I mean, in some of those writings, the</p> <p>3 authors just flat out say that the exposure estimates</p> <p>4 are guesstimates, that they are really estimating,</p> <p>5 really estimating, because they just don't have much to</p> <p>6 base it on. You're going back so far in time that the</p> <p>7 exposure data has not been especially terrifically well</p> <p>8 collected, and so they're kind of -- they're guessing,</p> <p>9 and they admit that they are.</p> <p>10 Q To be specific, the reference that you're</p> <p>11 citing which I think is a paper by Dr. Amandus, is</p> <p>12 relating to data that was collected prior to 1968;</p> <p>13 correct?</p> <p>14 A Yeah, it was in the '60s.</p> <p>15 Q You're not talking about the post-'68 data;</p> <p>16 correct?</p> <p>17 A I believe it was in the early '60s, yeah.</p> <p>18 Q Okay; early '60s and before that; correct?</p> <p>19 A Yeah.</p> <p>20 Q And there was exposure data during that time</p> <p>21 period but it wasn't as robust; correct?</p> <p>22 A That would be a good way of putting it.</p> <p>23 Q Okay. And similar to any other</p> <p>24 asbestos-exposed cohort during that time, to the extent</p> <p>25 that there were exposure measurements which there were</p>

<p style="text-align: right;">Page 113</p> <p>1 not that many all around the country, but to the extent 2 that there were, like in Libby, they were in million 3 particles per cubic foot; correct?</p> <p>4 A Right.</p> <p>5 Q And not in fibers per cc; correct?</p> <p>6 A Right.</p> <p>7 Q Which is another limitation of using early data 8 in a more recent potency analysis; correct?</p> <p>9 A Right.</p> <p>10 Q Okay. The limitations of the data that is 11 available on the cohort of workers in Libby, was 12 expressly set out in the studies by NIOSH and McDonald 13 that were published in the 1980s; correct?</p> <p>14 A I believe so, yes.</p> <p>15 Q Despite that, are you aware that the authors 16 Environmental Protection Agency has repeatedly, in 17 publications, in criminal prosecutions, and in other 18 contexts, has relied upon that data?</p> <p>19 A I didn't know that exactly, but I'm not 20 surprised.</p> <p>21 Q Okay. And are you aware that the authors 22 Hodgson and Darnton, which have performed what I 23 understand to be the most comprehensive toxicity 24 analysis of asbestos fibers comparing chrysotile and 25 amphibole and other fibers, also relied upon the data</p>	<p style="text-align: right;">Page 115</p> <p>1 published -- aside from the limitations noted by 2 Dr. Amandus, are you aware that there's only one 3 published criticism of that exposure data that appeared 4 at the time of the Amandus and McDonald studies? Have 5 you looked at that?</p> <p>6 A I wasn't aware of that, no.</p> <p>7 Q Okay. Are you aware that the criticism of the 8 data was that it underestimated the level of exposures 9 of the workers?</p> <p>10 A I was not aware of that, no.</p> <p>11 Q Okay. If it were true that the exposure -- the 12 worker exposure data collected by Grace and relied upon 13 by Dr. Moolgavkar in his toxicity analysis were an 14 underestimate of the actual level of exposure 15 experienced by the workers, then that would mean, 16 necessarily, that the toxicity of the Libby asbestos, as 17 reported by Dr. Moolgavkar, would be an overestimate; 18 correct?</p> <p>19 A Right.</p> <p>20 Q And, indeed, if the opposite were true, it 21 would be the other way; correct?</p> <p>22 A Right.</p> <p>23 Q Okay. Aside from the -- your concerns about 24 the reliability of the data -- well, let me ask 25 you -- let me ask you this before I go there.</p>
<p style="text-align: right;">Page 114</p> <p>1 that was collected in the Amandus and McDonald study, 2 the exposure data collected?</p> <p>3 A I'm not surprised.</p> <p>4 Q And you're aware that Dr. Sullivan, who's 5 currently with NIOSH, relied upon that data for her 6 published mortality follow-up, and that that study that 7 she published, indeed, was relied upon by testifying 8 experts on behalf of the government of the United States 9 in the criminal case against Grace? Are you aware of 10 that?</p> <p>11 A I was not aware of that.</p> <p>12 Q Okay. And obviously, you know that Dr. Amandus 13 and Dr. McDonald relied upon that data when they did 14 their studies in the 1980s; right?</p> <p>15 A Right.</p> <p>16 Q And you're aware that Dr. McDonald relied upon 17 that same data, again, in 2004 --</p> <p>18 A Right.</p> <p>19 Q -- when he did his follow-up. Okay.</p> <p>20 How many other cohorts of asbestos-exposed 21 individuals in the United States have over 4,000 22 individual industrial hygiene samples? Are you aware of 23 any others?</p> <p>24 A No.</p> <p>25 Q Are you aware that there's only one</p>	<p style="text-align: right;">Page 116</p> <p>1 If you wanted to conduct a toxicity analysis of 2 the fibers at Libby as compared to fibers somewhere 3 else --</p> <p>4 A Uh-huh --</p> <p>5 MR. FINCH: Some other type of fibers?</p> <p>6 Q (By Ms. Harding) Some other type of fibers 7 somewhere else that had been responsible for the 8 exposures in the past that have lead to disease in the 9 future -- or in the present, what exposure data would 10 you rely you, would you look to?</p> <p>11 MR. HEBERLING: Objection; vague as to what 12 kind of study we're doing. I don't understand the 13 parameters of this.</p> <p>14 Q (By Ms. Harding) Okay. Do you understand what 15 I'm asking?</p> <p>16 A No, I didn't really.</p> <p>17 Q All right; that's fair. It seemed so clear to 18 me.</p> <p>19 A Right, right.</p> <p>20 Q If -- you understand the toxicity analysis 21 Dr. Moolgavkar did.</p> <p>22 A Uh-huh.</p> <p>23 Q Okay. Do you -- have you published 24 toxicity -- epidemiological -- analytical 25 epidemiological analysis of the toxicity of a carcinogen</p>

<p style="text-align: right;">Page 117</p> <p>1 in the past? Have you ever done that before? And maybe 2 I should -- actually, I'll make it more clear.</p> <p>3 Have you, as an epidemiologist, ever published 4 or conducted a quantitative analytical epidemiological 5 analysis of the toxicity of a carcinogen?</p> <p>6 A That's a hard question, because, you know, most 7 epidemiologists would say when you're looking at dose 8 response data that you are looking at the toxicity.</p> <p>9 Q Uh-huh.</p> <p>10 A And somewhere along the line, I'm sure I've 11 done a few of those. I think that to answer your 12 question, in general, if I was asked to do such a study, 13 first thing I would do is I would go find the best 14 toxicologist I could get to carry out the study with me 15 for me; okay? And it's kind of how I tend to do 16 business. I will often work with collaborators who have 17 more expertise than I do; okay?</p> <p>18 Q Uh-huh.</p> <p>19 A I can understand what they're doing, but I'm 20 not going to try to do it myself, because my field is 21 not toxicology, per se.</p> <p>22 Q Okay. But let me go back and ask two separate 23 questions. What studies have you conducted that 24 examined the dose response relationship between a 25 carcinogen and a disease?</p>	<p style="text-align: right;">Page 119</p> <p>1 kind of a relationship between the amount of exposure 2 you get and the advent of clinical disease; okay?</p> <p>3 If -- you always want to stratify out your exposure, if 4 you can, and say, Okay, is it less than five cigarettes 5 a day will cause a stroke? you know, or How many pack 6 years do we need to look at to find an association when 7 we're controlling for a bunch of other variables in this 8 regression? Because you need to have some idea of the 9 power of a disease agent, I guess, if you will; okay?</p> <p>10 If there is something going on, there should be a 11 relationship between the dose and the response.</p> <p>12 Q And you should -- and if there something going 13 on, you typically look for a statistically-significant 14 dose response relationship; correct?</p> <p>15 A Uh-huh; right, right.</p> <p>16 Q Meaning that at lower levels of exposure, you 17 have a level of response and at higher levels of 18 exposure, you have a higher response; correct?</p> <p>19 A Right. And there are specific statistical 20 tests that you use to assess that across the strata of 21 the dose.</p> <p>22 Q Okay. So you don't disagree with the -- with 23 the inquiry into the question of toxicity of asbestos; 24 correct?</p> <p>25 A No, I don't disagree with that.</p>
<p style="text-align: right;">Page 118</p> <p>1 A We did some logistic regressions on tobacco use 2 in stroke back in the '80s which would be similar to the 3 sorts of things that your expert witness is doing in 4 terms of working with a regression technique.</p> <p>5 Q And the types of studies that you're talking 6 about, I haven't seen your study on that, but I believe 7 that the exposure that you would be studying, the dose 8 response relationship with --</p> <p>9 A Uh-huh, yes.</p> <p>10 Q -- would be measured by the typically 11 self-reported smoking status of the individual; correct?</p> <p>12 A Right, right.</p> <p>13 Q Okay. And there are, in the literature, all 14 kinds of studies that discuss the benefits and 15 limitations of using self-reported exposure data in dose 16 response relationships; correct?</p> <p>17 A Correct.</p> <p>18 Q But the fact of the limitations 19 doesn't -- doesn't stop the studies from being done and 20 funded; correct?</p> <p>21 A We plow right ahead anyway.</p> <p>22 Q And why is it that a dose response is studied 23 in the field of analytical epidemiology? Why is it 24 important?</p> <p>25 A Basically, you are assuming that there is some</p>	<p style="text-align: right;">Page 120</p> <p>1 Q Okay. And you don't -- you wouldn't say that 2 the -- all of the studies that have been published that 3 attempt to utilize the exposure data from the Libby 4 working cohort, the studies by the EPA, Hodgson and 5 Darnton, Sullivan, Amandus, and McDonald, that those are 6 not good analytical epidemiological studies. You 7 don't -- you don't -- you aren't saying that; correct?</p> <p>8 A No, I'm not.</p> <p>9 MR. HEBERLING: Objection; compound.</p> <p>10 Q (By Ms. Harding) I'm sorry; I don't think she 11 got your answer though.</p> <p>12 A I'm not -- I'm not saying that.</p> <p>13 Q I think what you're saying is that the -- that 14 the reliability of the exposure data is a limitation on 15 any analysis that's performed on that data; correct?</p> <p>16 A That's correct.</p> <p>17 Q Okay.</p> <p>18 A I mean, the thing is is that we are 19 taught -- you know, our training in the field is 20 essentially one of being hypercritical about data, 21 always. You're supposed to be hypercritical of it, 22 because that puts you in a situation of being 23 hypercritical of your own data and, therefore, you're 24 always -- when you're arguing about something as 25 important as disease risk, you are doing it in a</p>

<p style="text-align: right;">Page 121</p> <p>1 conservative fashion. And it's a way of putting a brake 2 on our own theoretical and methodological exercises.</p> <p>3 MS. HARDING: Is it time for lunch? Break 4 for lunch?</p> <p>5 VIDEO TECHNICIAN: Off the record, the time 6 is 12:25.</p> <p>7 (Deposition in recess from 12:25 p.m. to 8 1:12 p.m.)</p> <p>9 VIDEO TECHNICIAN: We're back on the 10 record. The time is 1:12.</p> <p>11 Q (By Ms. Harding) Dr. Molgaard, I'm sorry, a 12 couple more questions about the CARD Mortality Study 13 and, really, actually, Dr. Whitehouse's use of it.</p> <p>14 A Uh-huh.</p> <p>15 Q And I just want to make the record clear, 16 because I think -- I think it is, but I just want to 17 make sure.</p> <p>18 On page -- I've written over it, and I think it 19 must be 19 of Dr. Whitehouse's study.</p> <p>20 MR. FINCH: Report.</p> <p>21 MS. HARDING: Report, I'm sorry; thank you.</p> <p>22 Q (By Ms. Harding) Exhibit -- it's the May 23 report, Exhibit 5. Oh, I'm sorry, this is your report; 24 I apologize. This is your report. You have some -- so 25 this is Exhibit 2.</p>	<p style="text-align: right;">Page 123</p> <p>1 A Yes.</p> <p>2 Q Okay. So that the conclusion -- or the 3 statement "The CARD Mortality Study could be used to 4 draw conclusions about asbestos-related mortality in the 5 entire cohort of Libby, by simply assuming that the 6 entire cohort of Libby there was no additional ARD 7 deaths which were not CARD Mortality Study deaths. This 8 is a very conservative assumption of zero deaths in the 9 rest of the cohort. The conclusion at Dr. Whitehouse's 10 report that 'Libby's mesothelioma rate is certainly the 11 highest in the United States' is a proper conclusion. 12 It is a proper epidemiological conclusion because it 13 rests on comparison with other available mesothelioma 14 rates in the United States. This is how epidemiologists 15 make judgments about excess occurrence of disease and 16 excess occurrence of risk. It is standard of practice 17 in epidemiology and public health." And by that I 18 understand that you mean that it is appropriate to make 19 that comparison and to talk about this possibility as 20 generating a hypothesis that should now be tested with 21 analytical epidemiology; correct?</p> <p>22 A Right.</p> <p>23 Q The -- we marked earlier Exhibit 1, I think, is 24 the new data from -- or I'm not sure how new it 25 is -- but data that you just provided from NIOSH, CDC</p>
<p style="text-align: right;">Page 122</p> <p>1 So on page 19 of your report, you talk about 2 some comparisons and line of reasoning and kinds of 3 conclusions -- well, let me start with comparisons.</p> <p>4 I think you've already testified, I just want 5 to make sure that it's true with respect to the kinds of 6 things that you say on page 19, that any comparisons 7 that you make, based upon the data or the analysis of 8 Dr. Whitehouse in his CARD Mortality Study, are intended 9 to be hypothesis generating comparisons; correct?</p> <p>10 A Right.</p> <p>11 MR. HEBERLING: Objection; confusing and 12 overbroad as to all the comparisons on page 19.</p> <p>13 Q (By Ms. Harding) Okay. Well, to start with, 14 with respect to the comparison of the CARD Mortality 15 Study to the Markowitz and the Selikoff and Seidman 16 study, I think you already testified that comparisons 17 between CARD Mortality Study and those studies are for 18 the purpose of generating hypothesis --</p> <p>19 A Yes.</p> <p>20 Q -- to be later tested by analytical 21 epidemiological studies; correct?</p> <p>22 A Yes.</p> <p>23 Q Okay. And the same could be said with respect 24 to the middle paragraph, here, when you talk about 25 conclusions about the entire cohort of Libby; correct?</p>	<p style="text-align: right;">Page 124</p> <p>1 National Institute Occupational Safety and Health, 2 Work-Related Lung Diseases (WoRLD) Surveillance System 3 Asbestosis: Mortality; is that right?</p> <p>4 A That's right.</p> <p>5 Q And it looks like the -- underneath 6 Work-Related Lung Disease (WoRLD) Surveillance System, 7 it says -- it looks like -- did it come from a website; 8 do you know?</p> <p>9 A Actually, Jon found it and I did not find it, 10 so I'm not sure where it was from.</p> <p>11 Q Okay. It looks like it says "Asbestosis and 12 Related Exposures 2007 TO 1-10." Do you see that in 13 kind of a --</p> <p>14 A I actually don't have it.</p> <p>15 Q I think it's in the very bottom.</p> <p>16 A Is it?</p> <p>17 Q Or maybe not. Maybe -- did we ever give you 18 one?</p> <p>19 A I don't think I got one.</p> <p>20 MS. HARDING: You might have the original, 21 Jon. Do you need a copy back?</p> <p>22 MR. HEBERLING: No.</p> <p>23 Q (By Ms. Harding) Do you know if this data was 24 generated in 2007 and reported -- first reported in 25 2007?</p>

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<p>1 A I don't know.</p> <p>2 Q Don't know; okay. But if you just turn to the 3 page of the data, it's got six columns; is that right?</p> <p>4 A I have -- yes, there are six.</p> <p>5 Q County is the first column, State is the second 6 column.</p> <p>7 A Right.</p> <p>8 Q Okay; Age-Adjusted Rate, Crude Rate, Number of 9 Deaths, and Percent Female; is that right?</p> <p>10 A Right.</p> <p>11 Q Okay. What I wanted to ask you is, there is a 12 difference between the rate of disease in a population 13 and the number of cases of disease in a population; 14 correct?</p> <p>15 A Right.</p> <p>16 Q And just -- it's also true that a particular 17 geographical location may have the highest rate of 18 disease, but that same geographic location may not have 19 the highest number of cases of disease; correct?</p> <p>20 A That's correct.</p> <p>21 Q Okay. And, indeed, that's the case on this 22 chart here; right? It lists Lincoln County as having 23 the highest rate of disease --</p> <p>24 A Right.</p> <p>25 Q -- for asbestosis; is that right?</p>	<p>1 asbestosis; is that right?</p> <p>2 A Yeah, that's right.</p> <p>3 Q And the fourth is Mobile County, Alabama with 4 137 cases of asbestosis. And then, looks like the 5 fifth, I think, is Kitsap County, Washington with 107 6 cases. Do you see that?</p> <p>7 A Uh-huh; yes.</p> <p>8 Q Now, in this case in which you've been asked to 9 testify on behalf of the Libby Claimants, you are 10 not -- or haven't been asked, I don't think -- you can 11 correct me if I'm wrong -- to testify about the number 12 of claims that will be presented to a hypothetical trust 13 if Grace emerges from bankruptcy; is that correct?</p> <p>14 A I have not had that discussion with anybody.</p> <p>15 Q Okay. And the fact that Lincoln County has the 16 highest rate of asbestosis does not necessarily mean 17 that Lincoln County will present to the trust, after 18 it's formed if it's formed, the highest number of cases; 19 correct? You don't know the answer to that; correct?</p> <p>20 A I don't, no.</p> <p>21 Q Okay. And it's -- well, that's fine. And you 22 aren't going to be presenting any testimony on that 23 issue; correct?</p> <p>24 MR. HEBERLING: Objection; unclear as to 25 what issue?</p>
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<p>1 A That's right.</p> <p>2 Q Okay. And -- but in terms of the numbers of 3 cases of asbestosis in a given county, it's not the 4 highest; correct?</p> <p>5 A That's correct.</p> <p>6 Q Indeed, it's -- I can't tell exactly where. It 7 may be somewhere in the middle?</p> <p>8 A Yeah, that sounds fair.</p> <p>9 Q Okay. It's got 44 cases of asbestosis listed 10 in number of deaths; is that correct?</p> <p>11 A That's right.</p> <p>12 Q And the highest number of cases of disease in 13 any county is Camden County, New Jersey; correct?</p> <p>14 A That's right.</p> <p>15 Q And that's 152 cases.</p> <p>16 A That's right.</p> <p>17 Q And then the second highest, looks like it's 18 Mobile County, Alabama with -- oh, no, that's not right; 19 I'm sorry. The second highest would be Jefferson 20 County, Texas.</p> <p>21 A Texas, yeah.</p> <p>22 Q With 151 cases.</p> <p>23 A Right.</p> <p>24 Q Okay; of asbestosis. The third highest is 25 Somerset County, New Jersey with 143 cases of</p>	<p>1 Q (By Ms. Harding) Okay; on the issue of how 2 many cases from any particular jurisdiction and eventual 3 trust will be presented with from any particular county.</p> <p>4 A Yeah, I wouldn't be addressing that.</p> <p>5 Q Okay.</p> <p>6 The next thing I wanted to ask about is there 7 are a number of -- there's a place in Dr. Whitehouse's 8 report where he calculates a rate of mesothelioma in 9 Libby. Do you recall that?</p> <p>10 A Uh-huh.</p> <p>11 Q And there's also a place where he calculates a 12 rate of asbestosis in Libby.</p> <p>13 A Right.</p> <p>14 Q Okay. Now, if you're going to calculate a rate 15 of disease in a given geographic location, it is 16 Epidemiology 101 that your denominator must be the 17 population that gives rise to your numerator of cases; 18 is that right?</p> <p>19 A It can be done that way. I mean, it's usually 20 done that way, but you can also crank rates the same way 21 that Whitehouse did which is basically it's a rate 22 within his own case series. There's nothing wrong with 23 doing that. But it's not -- normally, you're going to 24 work the way you suggested.</p> <p>25 Q Okay. But just to be clear, the rates that he</p>

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<p>1 did within his population relate to the rates within his 2 population.</p> <p>3 A Right.</p> <p>4 Q Meaning his patients.</p> <p>5 A His patients. It's within his case series, 6 yeah.</p> <p>7 Q And it's not a rate of disease in a given 8 geographic location; correct?</p> <p>9 A Correct.</p> <p>10 MS. HARDING: Okay. And there's -- could 11 we mark this list as Exhibit 14.</p> <p>12 (Deposition Exhibit No. 14 marked for 13 identification.)</p> <p>14 Q (By Ms. Harding) What's been marked as 15 Exhibit Number 14 is a list of -- well, the title is 16 Mesothelioma Cases With Exposure to Libby Asbestos as a 17 Significant Factor. And this is a list of cases that 18 was attached to Dr. Whitehouse's expert report, both in 19 December and in May; correct?</p> <p>20 A Uh-huh.</p> <p>21 Q Okay. And Exhibit 14, when it says 22 mesothelioma -- the title, "Mesothelioma Cases With 23 Exposure to Libby Asbestos as a Significant Factor," 24 what was the test that Dr. Whitehouse used for 25 determining whether Libby asbestos was a significant</p>	<p>1 A I believe so.</p> <p>2 MS. HARDING: Okay. I'm just going to show 3 you -- let's mark this. What's next?</p> <p>4 (Deposition Exhibit No. 15 marked for 5 identification.)</p> <p>6 Q (By Ms. Harding) I'm showing you what's been 7 marked as Exhibit 15 which is a complaint involving 8 Pederson. Have you seen a copy of that before?</p> <p>9 A No, I have not.</p> <p>10 Q Okay. I'm not going to spend a lot of time on 11 it, but you'll see in the caption it says "Andrine Mary 12 Jane Pederson, Individually and as Personal 13 Representative of the Estate of Arnold M. Pederson." 14 And could you look on Exhibit 14. I think it's the 15 number 24th person on the list.</p> <p>16 A Twenty-three.</p> <p>17 Q Twenty-three, as Arnold M. Pederson.</p> <p>18 A Arnold, yeah.</p> <p>19 Q And I know that you don't have any way of 20 knowing whether those two people are the same or not; 21 correct?</p> <p>22 A You're right, I don't.</p> <p>23 Q Would you see in -- do you see in this caption 24 a list of companies that have historically been 25 Defendants in some asbestos litigation; Saberhagen</p>
Page 130	Page 132
<p>1 factor? What does that mean to you? Have you talked to 2 Dr. Whitehouse about that?</p> <p>3 A No, I haven't.</p> <p>4 Q What did you take it to mean?</p> <p>5 A What I took it to mean was that he had -- these 6 were cases that he had worked up clinically and had 7 excluded other causes of meso and had decided that these 8 were caused by exposure to Libby asbestos, in his 9 clinical opinion.</p> <p>10 Q Okay. And were you provided with any 11 information by the Libby Claimants or Dr. Whitehouse 12 that would tend to suggest that -- that at least some of 13 the cases on this list that the -- Libby asbestos was 14 not a significant factor in the development of the 15 mesothelioma?</p> <p>16 A There was -- I mean, there were a few times 17 when he went back into this list and decided that 18 somebody had been misclassified. I saw a little bit of 19 written material about that, where he excluded -- took 20 somebody off a list; No, this is a mistake or something 21 like that. A couple of those happened.</p> <p>22 Q In a -- in former versions of the list; right?</p> <p>23 A Yeah, right.</p> <p>24 Q But the current version of the list is the one 25 that he's relying on in the case; correct?</p>	<p>1 Holdings, Inc., as successor to Tacoma Asbestos Company, 2 The Brower Company, Bartels Asbestos Settlement Trust, 3 General Refractories Company, Georgia-Pacific 4 Corporation. It goes on and on and on --</p> <p>5 A Right.</p> <p>6 Q -- as reflected in the caption.</p> <p>7 A Right.</p> <p>8 Q Were you aware that there were people on this 9 mesothelioma list who had, at least in their own right, 10 alleged significant exposure to other asbestos in the 11 development of their mesothelioma?</p> <p>12 A No, I was not aware of that.</p> <p>13 Q If that were the case, would that change your 14 opinion that the list of mesotheliomas in Exhibit 14 15 only included people where other significant asbestos 16 exposures had been excluded from the possible etiology 17 of their disease?</p> <p>18 MR. HEBERLING: Objection; misstates the 19 exhibit.</p> <p>20 Q (By Ms. Harding) You can answer if you 21 understand.</p> <p>22 A It would probably change my opinion that it's a 23 clean list.</p> <p>24 Q Now, I know that there are -- Dr. Whitehouse 25 attempts to make some statements about rates of</p>

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<p>1 mesothelioma in using this Exhibit 14, this list of 2 mesotheliomas; is that correct?</p> <p>3 A Yes, that is true.</p> <p>4 Q Okay. If you're going to even attempt to make 5 such a calculation, in the numerator is going to be this 6 list of cases.</p> <p>7 A Uh-huh.</p> <p>8 Q Okay. What should the -- well, let me ask you 9 this. Do you understand that this list of cases in 10 Exhibit 14 are all cases that were -- I think you 11 already testified that he -- that he -- did they all 12 develop in Libby?</p> <p>13 A I believe there were some that developed 14 elsewhere. But the common thread, supposedly, is that 15 they had some kind of significant interaction with the 16 Libby environment at some time during their lives.</p> <p>17 Q Okay. So that, for instance, on the list 18 includes somebody that vacationed in Libby in the 19 summers; correct?</p> <p>20 A Right; Arnold Pederson, correct.</p> <p>21 Q But they lived in other places.</p> <p>22 A Right.</p> <p>23 Q And worked in other places.</p> <p>24 A Right, yeah.</p> <p>25 Q And there are people who didn't ever live in</p>	<p>1 A I think I said earlier that I believe that some 2 of them were not his patients. It would not change my 3 opinion of the overall thrust of this.</p> <p>4 Q Okay. Because they're not -- some of the 5 people on this list, I believe Dr. Whitehouse has 6 admitted in several different places, are not 7 individuals that he's seen in his practice and diagnosed 8 in his practice, and they aren't part of his population.</p> <p>9 A Right.</p> <p>10 Q Okay. So as I understand what Dr. Whitehouse 11 did, with the assistance of Dr. Black and Mr. Heberling 12 and his colleagues, was that they attempted to gather as 13 many cases as they could from around the country of 14 people who had some connection -- who had mesothelioma 15 and had some connection to Libby. Is that -- do 16 you -- is that -- do you agree with that description?</p> <p>17 A I wasn't really involved with what was 18 happening, and so I don't really know where they all 19 came from or how they were attempting to identify them. 20 But they do have folks who are living -- who lived 21 elsewhere, you know. So I imagine they tried to be as 22 thorough as they could.</p> <p>23 Q Right; and I'm not suggesting that they didn't. 24 I think what I'm trying to get an understanding 25 of -- and I'm not really even -- I'm not really trying</p>
Page 134	Page 136
<p>1 Libby. They lived outside of Libby, but they had some 2 connection to Libby; correct?</p> <p>3 A Right; correct.</p> <p>4 Q And there are people that lived in Libby for 5 short periods of time and then lived in other places for 6 most of their lives; correct?</p> <p>7 A Correct.</p> <p>8 Q Okay. And if the numerator includes this list 9 of 34 people, then the denominator has to include the 10 population of people from which the numerator came; 11 correct?</p> <p>12 A Ideally. But really, remember, what he's 13 really kind of doing is a proportionate mortality ratio 14 out of his case series, you know. That's what he's 15 coming up with. As he's -- he doesn't have the 16 classical numerator/denominator for what he's doing; 17 okay?</p> <p>18 Q Okay.</p> <p>19 A He -- his denominator is basically everybody 20 who came in, and then he has a numerator of the folks 21 who are dead.</p> <p>22 Q Okay. Do you -- would it change your opinion 23 on that, if you were to understand that at least 24 several, and possibly many, individuals on this list 25 were not patients of Dr. Whitehouse?</p>	<p>1 to talk about what the actual rate of mesothelioma and 2 Libby might be. It seems to me that that's something 3 that's ascertainable. You get the ICD-9 codes for 4 mesothelioma in Libby, and you get the population of 5 Libby, and you obtain a rate. That's very standard 6 descriptive epidemiological practice; correct?</p> <p>7 A Right.</p> <p>8 Q That's not what they're doing here; correct?</p> <p>9 A It's not. Because what they're trying to do 10 here, really, is to do a very complete case finding or 11 case ascertainment; okay? When you do that, you can 12 introduce sources of bias into the project. 13 Epidemiologists often talk about a misclassification 14 bias where you are -- where you have misclassified 15 someone as a case or a control and it has impact on what 16 your bottom line rates are. And that can happen.</p> <p>17 Q Okay. It would be -- let's just start -- let's 18 just maybe make it easier. 19 It would be improper to use this list of 34 20 cases of mesothelioma as a numerator and as the 21 denominator only use the population of Lincoln County; 22 correct? That would be improper.</p> <p>23 A That would be.</p> <p>24 Q Okay. And so that the -- what you would need 25 to do to be more rigorous, from a scientific perspective</p>

<p style="text-align: right;">Page 137</p> <p>1 in doing this descriptive and most descriptive 2 epidemiological exercise, would be to attempt, at least, 3 to include in a denominator the populations from which 4 these other cases came in some way or another; correct?</p> <p>5 A Um--</p> <p>6 Q Or the number of years that the person lived in 7 the other populations?</p> <p>8 A What's fair. Yeah, I mean, ideally you could 9 think of it that way. I think, though, that the idea of 10 including, you know, a denominator from Omaha, Nebraska 11 into the -- adding that into the denominator from Libby 12 for somebody who had moved out of Libby and lived in 13 Omaha, I'm not sure if that would be the 14 appropriate -- the appropriate resolution.</p> <p>15 Q I don't think I'm -- I'm not suggesting that 16 you would include the entire population of Omaha in 17 doing that.</p> <p>18 A Yeah.</p> <p>19 Q I'm just saying that you have to account for 20 the fact that in the numerator, he's including people 21 that have lived and worked in many other locations.</p> <p>22 MR. HEBERLING: Objection; misstates the 23 record and the report.</p> <p>24 MS. HARDING: I don't think it does, but 25 you can answer that.</p>	<p style="text-align: right;">Page 139</p> <p>1 study they'll calculate associations, like you said, for 2 the purpose of generating hypotheses.</p> <p>3 A Sometimes they'll do -- yeah, they'll do an 4 observed expected ratio; sure. But in this case, they 5 did not.</p> <p>6 Q And also in this case series, again, the 7 mesotheliomas are not all from -- purely from Libby 8 residents or Lincoln County residents; correct? If you 9 look at chart number -- actually, I think you have to 10 look at the description of the cases to see that on page 11 three.</p> <p>12 A Oh, where they do case one, case two?</p> <p>13 Q Right.</p> <p>14 A Yeah, yes.</p> <p>15 Q Again, there are people that had a connection 16 to Libby at sometime.</p> <p>17 A Somebody lived in eastern Washington but 18 vacationed in Libby nearly every summer in the '60s, 19 yeah.</p> <p>20 Q Right.</p> <p>21 A Those kind of cases, that's what you're 22 referring to.</p> <p>23 Q Right. And was it your understanding, with 24 respect to the mesothelioma study on Exhibit 6, that 25 Dr. Whitehouse had excluded other potential significant</p>
<p style="text-align: right;">Page 138</p> <p>1 MR. HEBERLING: Well, where did he use 31 2 as the numerator?</p> <p>3 MS. HARDING: You're saying that he hasn't 4 used this number to attempt to calculate the 5 mesothelioma rates?</p> <p>6 MR. HEBERLING: That's right. He used 7 portions of it based upon residents at death and so 8 forth, but he didn't use the whole 34 or 31 on the list.</p> <p>9 Q (By Ms. Harding) Okay. Well in any event, 10 regardless of -- I'm talking, generally speaking, it is 11 improper to calculate a rate where the denominator is 12 not the population that gave rise to the numerator.</p> <p>13 A In general, yeah.</p> <p>14 Q Very briefly, I think we spoke about it in the 15 very beginning, the environmental exposure to Libby 16 asbestos and mesotheliomas, Dr. Whitehouse's -- what 17 exhibit is that -- Exhibit Number 6. You said earlier 18 that was a descriptive study not capable of testing 19 causal hypotheses; correct?</p> <p>20 A That's how I would categorize it, yes.</p> <p>21 Q Okay. Indeed, in that study in Exhibit 6, 22 there aren't even associations calculated; correct?</p> <p>23 A I think it was so totally descriptive, yeah; 24 right.</p> <p>25 Q Right. I mean, sometimes in a descriptive</p>	<p style="text-align: right;">Page 140</p> <p>1 causes of mesothelioma in listing those cases?</p> <p>2 A I assume he had.</p> <p>3 Q If Mr. Pederson that had the complaint alleging 4 all the other occupational exposure to asbestos were 5 included in the Libby mesothelioma study in Exhibit 6, 6 that would suggest, again, that Dr. Whitehouse had not 7 excluded other potential significant causes of asbestos; 8 correct?</p> <p>9 A It's possible, yeah.</p> <p>10 Q And the same discussion we just had about 11 the -- how it's the appropriate way to calculate a rate 12 of disease in a geographic location would be equally 13 applicable to the Whitehouse mesothelioma study too; 14 correct?</p> <p>15 A Right.</p> <p>16 Q Such that if you were going to attempt to 17 calculate a rate of mesothelioma in Lincoln County using 18 his eleven cases in his Exhibit 6, you would somehow 19 have to account for the amount of time that the 20 individuals in the numerator had spent outside of Libby, 21 correct, to the extent that it was significant.</p> <p>22 A Yeah, I mean, to the extent that it's 23 significant. I mean, you're -- it's very hard when 24 you're doing these kinds of studies, because people move 25 around and then you have to decide how to count them.</p>

<p style="text-align: right;">Page 141</p> <p>1 And some epidemiology organizations have very 2 sophisticated approaches to dealing with migration, and 3 others don't have the ability to do it. And so you end 4 up with papers like that where there isn't a systematic 5 approach to dealing with in-and-out migration.</p> <p>6 Q Okay. But it's fair to say that, just looking 7 at the descriptions themselves of the cases, that for 8 several of the cases it's more than just kind of a 9 little bit of migration in and out. I mean, we've got 10 somebody that just vacationed there and lived for most 11 of their life somewhere else.</p> <p>12 A Uh-huh.</p> <p>13 Q We have -- I highlighted it somewhere else, 14 sorry -- folks that lived a hundred miles from Libby; a 15 patient that lived in eastern Washington. Well, that's 16 that man. We have somebody who lived in Libby for ten 17 years who was eighty-two, so clearly had lived for 18 seventy-two years somewhere else.</p> <p>19 A Right.</p> <p>20 Q So it's not just a matter of migrating in and 21 out. It's a fairly significant issue for these eleven 22 cases, that you would have to somehow figure out how to 23 account for that, correct, if you were trying to 24 calculate a rate?</p> <p>25 A Well, if I was doing it, I would probably</p>	<p style="text-align: right;">Page 143</p> <p>1 Mortality Study? 2 A Uh-huh.</p> <p>3 MS. HARDING: Could we take a look at that 4 scientific method chart that we talked about earlier? I 5 think it was Exhibit --</p> <p>6 MR. BLOOM: The one we marked? 7 MS. HARDING: The one we marked; right. 8 MS. BLOOM: Exhibit 10. 9 MS. HARDING: Exhibit 10.</p> <p>10 Q (By Ms. Harding) As I understand the ATSDR 11 Mortality Study, it's intended to be an analytic 12 epidemiologic study designed to test causal hypotheses; 13 is that correct?</p> <p>14 A I would need to look at that, if I could. 15 (Deposition Exhibit No. 16 marked for 16 identification.)</p> <p>17 Q (By Ms. Harding) Let me switch with you 18 because that way you've got the one that has the exhibit 19 number on it.</p> <p>20 A Okay. Yeah, okay. And your question was 21 whether or not I considered it an analytic -- yeah, I 22 would consider this analytical, I guess.</p> <p>23 Q Okay. I think my question was it was analytic 24 epidemiological study intended to test causal 25 hypotheses.</p>
<p style="text-align: right;">Page 142</p> <p>1 calculate the rate both ways. You know, there are eight 2 of these that appear to be solid. And I would do my 3 rates with the eight, and then do it with the eleven, 4 and then write up the reasoning for two different types 5 of rates.</p> <p>6 Q Okay. Do you have any knowledge of how the 7 exposure information was gathered for the cases that 8 appear in Dr. Whitehouse's mesothelioma study in Exhibit 9 6?</p> <p>10 A I assume that -- I have assumed that he 11 collected information on occupational history as part of 12 the clinical workup.</p> <p>13 Q Do you have any knowledge of the number of 14 cases in the Whitehouse mesothelioma study for whom the 15 exposure information was gathered by and provided to 16 Dr. Whitehouse by Mr. Heberling or his colleagues at his 17 law firm?</p> <p>18 A No.</p> <p>19 Q Have you ever been involved in any 20 epidemiological studies that were published in peer 21 reviewed literature where the exposure information that 22 you relied upon in the study was gathered by attorneys 23 that were claimants for individuals in the case?</p> <p>24 A Not that I can think of.</p> <p>25 Q Dr. Molgaard, you mentioned earlier the ATSDR</p>	<p style="text-align: right;">Page 144</p> <p>1 A I would say it is. It starts out as a fairly 2 descriptive mortality study, but then they do a whole 3 lot of -- of standard mortality ratios on a lot of 4 different dimensions, so that you're kind of moving into 5 a situation where initially the study is descriptive, 6 but there's so much inferential work done here that you 7 could think of it as an analytic effort.</p> <p>8 Q And the principal reason -- well, I may be 9 overstating that, but at least one of the reasons why 10 that's true is because they use controls to calculate 11 and identify SMRs, correct, the Standard Mortality 12 Ratios?</p> <p>13 A I'm not sure if -- it's not controlled so much 14 as they did the -- they observed to expected comparison. 15 The question is where their expected rates come from.</p> <p>16 Q I think if you look on page -- I've seen that 17 before -- page four, I think, at least for some. 18 Disease-Specific SMRs. Is that --</p> <p>19 A Yeah, that's where I'm looking. Yeah, compared 20 to state and national rates. So it appears that what 21 they did is they got state and national rates for the 22 disease and then made their comparisons. And that was 23 their comparison population was the state or the nation. 24 And that allowed them to calculate these SMRs.</p> <p>25 Q Okay. And by doing that -- and that is what</p>

<p style="text-align: right;">Page 145</p> <p>1 makes it into an analytic epidemiological -- designed, 2 at least, to attempt to -- 3 A They're attempting to bridge it into -- from 4 descriptive to an analytical effort, yeah. 5 Q You had mentioned earlier that you would -- I 6 think I asked you if you were trying to understand the 7 rate of disease in the Libby population, this would be 8 one of the studies you would look at; correct? 9 A Uh-huh, yeah. 10 Q Along with the work by Dr. Amandus and NIOSH 11 and their studies in the '80s, Dr. Sullivan's follow-up 12 of that work, and the McDonald studies, both in the '80s 13 and the follow-up in 2004; right? 14 A Right. 15 Q Okay. The -- if you turn to page 25 of the 16 document, table 7 -- you know, actually, before -- 17 MR. HEBERLING: Got an extra over there? 18 That's all right; I've got one. 19 Q (By Ms. Harding) You had a criticism of 20 Dr. Moolgavkar. I think Dr. Moolgavkar had a criticism 21 of the study, and you had a criticism of his criticism. 22 And it related to whether the additional lung cancers 23 that they added to the observed cases in this study was 24 appropriate or not; correct? 25 A Uh-huh.</p>	<p style="text-align: right;">Page 147</p> <p>1 for these diseases in the published literature? 2 A For Libby or just in general? 3 Q I'm sorry; for Libby, for Lincoln County. 4 A No, I think this is, by and large, the one that 5 has it like this. 6 Q Okay. And so is it fair to say that this is 7 the best analytic epidemiological evidence on the rates 8 of disease in Lincoln County for the period 1979 to 9 1988 -- 1998? 10 A I would say it's certainly one of the stronger 11 ones; okay? I don't know if it's the best, but it's 12 certainly one of the better ones. 13 Q Okay. What -- if there are -- there aren't 14 any -- would you agree with me that there 15 aren't -- well, there certainly are rates of disease in 16 the workers that are published in other places -- 17 A Right. 18 Q -- that are analytic epidemiology. 19 A Right. 20 Q Okay. Are there any other published analytic 21 epidemiologic studies designed to be able to test causal 22 hypotheses about disease rates in Lincoln County that 23 you're aware of? 24 A Um -- 25 Q Not just of workers.</p>
<p style="text-align: right;">Page 146</p> <p>1 Q Okay. And Dr. Moolgavkar thought that it was 2 not appropriate, and you thought that it was okay to do 3 it; correct? 4 A Yeah. 5 Q Leaving that aside, just looking at table 7, 6 for Combined Respiratory Mortality in Lincoln County -- 7 A Right. 8 Q -- Using the Montana and US Population 9 References, 1979 to 1998 -- 10 A Uh-huh. 11 Q -- would you agree that this provides the rate 12 of disease in Lincoln County during -- for these 13 diseases, during the period of time described, 1979 to 14 1998? 15 A Yeah, I would assume that's true. 16 Q Okay. And as far as you know -- well, let me 17 ask the next question. In table 8, would you agree that 18 it is the rate of disease for the diseases listed in 19 table 8 in Lincoln County, from 1979 to 1998, excluding 20 cases that had worked formerly for W.R. Grace at the 21 mine? 22 A That appears to be what it is, yeah. 23 Q Okay. And to your -- in your opinion, are you 24 aware of any other analytic epidemiological study that's 25 been published that provides this kind of information</p>	<p style="text-align: right;">Page 148</p> <p>1 A But in general, in the general population? 2 Q In the general population in Lincoln County. 3 MR. HEBERLING: Objection; unclear as to 4 time. 5 MS. HARDING: I think I said from 1979 to 6 1998. 7 THE WITNESS: I think -- this is the one I 8 guess I know of. 9 Q (By Ms. Harding) Okay. Are there any others 10 that I should look to or be aware of? I'm just not 11 aware of any others. I just want to make sure we're not 12 missing something. 13 A I think not. 14 Q Would you agree that in table 8, when the ATSDR 15 authors exclude the workers from the Libby mine from the 16 analysis, that the statistical -- that the statistical 17 significance of the relationships reported disappears in 18 all categories in table 8? 19 A Disappears, but it's very close in a couple of 20 places. But it is not apparent in table 8. 21 Q Okay. 22 Dr. Molgaard, I was going to ask you a bunch of 23 questions about Dr. Whitehouse's impression study, but 24 because my colleague here needs to go ask questions 25 next, I do just want to confirm that the Whitehouse</p>

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<p>1 Q Is that correct?</p> <p>2 A Yeah.</p> <p>3 Q Not a single one of them relates to</p> <p>4 asbestos-related disease?</p> <p>5 A Actually, there are -- there is one that</p> <p>6 relates to asbestos-related disease, but it may not be</p> <p>7 on that copy of the CV that you've got.</p> <p>8 Q Okay. Have you ever published an article on</p> <p>9 the epidemiology of asbestos-related disease in a peer</p> <p>10 review refereed journal?</p> <p>11 A Yes.</p> <p>12 Q What was the title of the article and what was</p> <p>13 it about?</p> <p>14 A After 150, it gets hard to remember titles</p> <p>15 exactly. But it's like it was a comparison of the</p> <p>16 experience in Minamata Bay, Japan where they had a very</p> <p>17 bad outbreak of mercury poisoning with the experience in</p> <p>18 Libby, Montana, in terms of the asbestos problems; okay?</p> <p>19 And basically what I was doing -- it was a journal</p> <p>20 that -- it was a sustainability journal. It's an</p> <p>21 environmental health kind of journal. And basically</p> <p>22 what I was doing there was just trying to say Here you</p> <p>23 have this pattern in this population. How did the</p> <p>24 community respond to it in Japan? How did the community</p> <p>25 respond to it in Libby? Are there any parallels? And</p>	<p>1 there was differences in potency between different types</p> <p>2 of asbestos?</p> <p>3 A I don't remember that discussion. But if you</p> <p>4 say it was in there, it's in there, I'm sure.</p> <p>5 Q You certainly haven't reviewed all of the</p> <p>6 analytical epidemiology literature that exists out there</p> <p>7 in the world about asbestos disease; correct?</p> <p>8 A Right.</p> <p>9 Q As part of your work in this case, you have not</p> <p>10 attempted to analyze whether amphibole asbestos is more</p> <p>11 likely to cause mesothelioma than chrysotile asbestos;</p> <p>12 correct?</p> <p>13 A Correct.</p> <p>14 Q The -- would you agree with me that nothing</p> <p>15 that Dr. Whitehouse has done can stand up, as a matter</p> <p>16 of analytic epidemiology, or support the hypothesis that</p> <p>17 Libby asbestos is more likely to cause mesothelioma than</p> <p>18 chrysotile asbestos?</p> <p>19 MR. HEBERLING: Objection; compound.</p> <p>20 THE WITNESS: In the sense that his studies</p> <p>21 are descriptive, they are not making -- they're not</p> <p>22 supporting one or another etiological position.</p> <p>23 Q (By Mr. Finch) In order to know whether Libby</p> <p>24 amphibole asbestos is more likely to cause mesothelioma</p> <p>25 than chrysotile asbestos on a fiber-for-fiber basis,</p>
Page 154	Page 156
<p>1 that was the thrust of the paper.</p> <p>2 Q Okay; but it wasn't an analytic study where</p> <p>3 you're trying to assess causation of asbestos-related</p> <p>4 disease; correct?</p> <p>5 A No, no.</p> <p>6 Q You weren't trying to compare the rate of</p> <p>7 asbestos disease seen in a Libby cohort compared to the</p> <p>8 rate of asbestos disease existing anywhere else;</p> <p>9 correct?</p> <p>10 A No. I was really looking at a community</p> <p>11 response to environmental perturbations.</p> <p>12 Q Okay.</p> <p>13 Are you familiar with the Environmental</p> <p>14 Protection Agency Science Advisory Board process?</p> <p>15 A Just in general.</p> <p>16 Q What is your general understanding of that?</p> <p>17 A That it exists and there is a process. That's</p> <p>18 about it.</p> <p>19 Q I believe you testified that you read</p> <p>20 Dr. Frank's deposition in preparation for your</p> <p>21 deposition today.</p> <p>22 A Yeah.</p> <p>23 Q Did you recall the discussion with him about</p> <p>24 the EPA Science Advisory Board process last summer where</p> <p>25 the question that they were asked to analyze was whether</p>	<p>1 you'd have to have accurate exposure data for the</p> <p>2 cohorts; correct?</p> <p>3 A You could -- there are a couple of ways you</p> <p>4 could do it. One would be that way. The other way</p> <p>5 would be to look at -- to do basically what NIOSH did</p> <p>6 recently where they were looking at that document 1 I</p> <p>7 think we looked at, where they were really</p> <p>8 making -- setting up a situation where you could do</p> <p>9 ecological comparisons between different counties in the</p> <p>10 United States. And the assumption there is that the</p> <p>11 counties that have high rates, not numbers but rates,</p> <p>12 are the ones that have some issues around asbestos,</p> <p>13 et cetera.</p> <p>14 Q But this Exhibit 1, this CDC NIOSH data, is</p> <p>15 descriptive epidemiology. It doesn't analyze whether or</p> <p>16 not -- it doesn't say anything at all about fiber type;</p> <p>17 correct?</p> <p>18 A Correct.</p> <p>19 Q And it doesn't analyze whether or not exposure</p> <p>20 to amphibole asbestos is more likely to cause</p> <p>21 mesothelioma than exposure to chrysotile asbestos;</p> <p>22 correct?</p> <p>23 A Correct.</p> <p>24 Q There's no data at all in here about whether</p> <p>25 people in Camden County or Sagadahoc County, Maine are</p>

<p style="text-align: right;">Page 157</p> <p>1 exposed to chrysotile asbestos, amphibole asbestos or 2 Libby asbestos; right?</p> <p>3 A Yeah. And the assumption would be that you 4 would have some extra information that you would know 5 that, for example, in Libby that there is this kind of a 6 fiber and elsewhere there's some other kind of a fiber. 7 And then you could say Well, in general, ecologically, 8 we can make this comparison. Ecological studies are not 9 considered a tremendously strong research design, but 10 you could make a comparison like that.</p> <p>11 It would be difficult -- I would not argue that 12 it was especially analytic to do that, but you could 13 look at a table like that and make some hypotheses.</p> <p>14 Q You could make some hypotheses, but you 15 certainly couldn't prove that hypothesis to a table like 16 what's in Exhibit 1; correct?</p> <p>17 A Correct.</p> <p>18 Q You would not testify, to a reasonable degree 19 of certainty as an epidemiologist, that exposure to 20 Libby asbestos is more likely to cause mesothelioma than 21 exposure to chrysotile asbestos.</p> <p>22 A Probably would not.</p> <p>23 Q You haven't done the work to make that 24 assessment; correct?</p> <p>25 A That's correct.</p>	<p style="text-align: right;">Page 159</p> <p>1 have an Exhibit 15 in this stack.</p> <p>2 MS. HARDING: Did I take it back? I'll 3 find it.</p> <p>4 THE WITNESS: Okay.</p> <p>5 MR. HEBERLING: What's the number on the 6 new one?</p> <p>7 MR. FINCH: 17 and 18.</p> <p>8 THE WITNESS: 17 and 18.</p> <p>9 MR. HEBERLING: I have one exhibit here. I 10 have the EPA November 14th.</p> <p>11 MR. FINCH: Yep, here it is; 17.</p> <p>12 Q (By Mr. Finch) Exhibit 18 is the report from 13 the Science Advisory Board to the EPA. Do you see that, 14 sir?</p> <p>15 A Yes, sir.</p> <p>16 Q And if you look to the third page of the 17 document that begins Enclosure 1, that lists the members 18 of the Science Advisory Board Asbestos Committee.</p> <p>19 A Okay.</p> <p>20 Q Do you see that?</p> <p>21 A Yep.</p> <p>22 Q And you see that you have toxicologists -- a 23 toxicologist on that list?</p> <p>24 A Uh-huh.</p> <p>25 Q You have a couple of epidemiologists on that</p>
<p style="text-align: right;">Page 158</p> <p>1 Q And to the extent that the EPA Science Advisory 2 Board, last summer, looked at every piece of analytic 3 epidemiology that existed in the world on exposure to 4 different asbestos fiber types and concluded that it was 5 impossible to quantify the difference between amphibole 6 asbestos and chrysotile asbestos in causing mesothelioma 7 or lung cancer, you would not be in a position to say 8 that they were wrong.</p> <p>9 A No, I would not.</p> <p>10 Q Have you ever heard of Les Stayner?</p> <p>11 A No.</p> <p>12 Q Ever heard of Julian Peto?</p> <p>13 A Yeah.</p> <p>14 Q I take it you weren't involved in the Science 15 Advisory Board project at all.</p> <p>16 A No.</p> <p>17 MR. FINCH: Okay. Why don't we mark these 18 as the next two exhibits.</p> <p>19 (Deposition Exhibit Nos. 17 and 18 marked for 20 identification.)</p> <p>21 Q (By Mr. Finch) Handing you what's been marked 22 as Exhibit 17 and Exhibit 18, and ask you some 23 questions, first, about Number 18 and then we'll move 24 back to Number 17.</p> <p>25 A Just in terms of housekeeping, I don't seem to</p>	<p style="text-align: right;">Page 160</p> <p>1 list?</p> <p>2 A Uh-huh.</p> <p>3 Q When say "uh-huh" you mean yes?</p> <p>4 A I'm sorry; yes, I mean yes.</p> <p>5 Q You have medical doctors on that list?</p> <p>6 A Yes, you do.</p> <p>7 Q You have statistics professors on that list?</p> <p>8 A Yes.</p> <p>9 Q You have industrial hygienists on that list?</p> <p>10 A Yes.</p> <p>11 Q You have someone who is a professor of soils 12 who is an expert in mineralogy on that list?</p> <p>13 A Right.</p> <p>14 Q In short, you have a group of people that, if 15 you wanted to test the hypothesis of whether or not 16 amphibole asbestos is more likely to cause mesothelioma 17 or lung cancer than is -- or other type of asbestos 18 fibers, would have the background to make that 19 assessment; correct?</p> <p>20 A They have the background to make an assessment.</p> <p>21 Q Yes. And neither you nor Dr. Whitehouse has 22 done the type of analytical work that would be necessary 23 to make the epidemiological determination that exposure 24 to Libby asbestos is more likely to cause mesothelioma 25 than exposure to chrysotile asbestos.</p>

<p style="text-align: right;">Page 161</p> <p>1 A I could make an assessment that was 2 epidemiologic in nature.</p> <p>3 Q But you haven't done it; correct?</p> <p>4 A I have not done it.</p> <p>5 Q Neither has Dr. Whitehouse; correct?</p> <p>6 A Not to my knowledge.</p> <p>7 Q Okay. And you have not made an assessment as 8 to whether or not exposure to Libby asbestos is more 9 likely to cause lung cancer than exposure to chrysotile 10 or any other type of asbestos.</p> <p>11 A Correct.</p> <p>12 Q And you can't say, as a matter of expert 13 epidemiological opinion, that exposure to Libby asbestos 14 is more likely to cause any asbestos-related disease 15 than exposure to chrysotile asbestos; correct?</p> <p>16 A I have not said that.</p> <p>17 Q You have not said that, and Dr. Whitehouse has 18 not said that.</p> <p>19 A Correct.</p> <p>20 Q And based on the work you have seen thus far in 21 the case, no one has done the analysis to be able to 22 say, as a matter of epidemiology, that exposure to Libby 23 asbestos is more likely to produce asbestos-related 24 disease in humans than exposure to other types of 25 asbestos.</p>	<p style="text-align: right;">Page 163</p> <p>1 Q Is the -- Dr. Whitehouse's paper on 2 mesothelioma in Libby, the 2008 paper, that's also a 3 case series?</p> <p>4 A Yes.</p> <p>5 Q The 2004 paper on progression of asbestos 6 disease, that's also a case series?</p> <p>7 A Yes.</p> <p>8 Q None of them are -- well, let me back up. 9 On page three of this expert report that you 10 signed in 2003 --</p> <p>11 A Uh-huh.</p> <p>12 Q -- paragraph 15, you refer to something called 13 a controlled epidemiological study.</p> <p>14 A Uh-huh.</p> <p>15 Q Do you see that?</p> <p>16 A Yes.</p> <p>17 Q What is a controlled epidemiological study?</p> <p>18 A That would be one where you either have a 19 formal control group or you have a comparison population 20 of some kind where you are trying to look at the 21 background rate of occurrence and compare it to the rate 22 of disease in the population. So you have a bunch of 23 people who have used ephedra, for example. What's the 24 rate of disease in that group compared to the normal 25 naturally-occurring rate of occurrence of the disease.</p>
<p style="text-align: right;">Page 162</p> <p>1 A I don't believe that exists.</p> <p>2 Q You mean you don't believe that -- nobody has 3 done the work to say that; correct?</p> <p>4 A Right; yeah.</p> <p>5 Q Now, Exhibit 17 is -- this is a document that 6 you signed; correct?</p> <p>7 A Yes.</p> <p>8 Q This is an expert report that you prepared in 9 connection with evaluating whether consumption of 10 products containing ephedra is a cause of stroke?</p> <p>11 A Yes.</p> <p>12 Q What's ephedra?</p> <p>13 A It's a dietary supplement.</p> <p>14 Q Okay.</p> <p>15 A An ingredient in a dietary supplement.</p> <p>16 Q Okay.</p> <p>17 You -- in one of your responses to 18 Mrs. Harding's questions, you described the CARD 19 Mortality Study as a case series?</p> <p>20 A Yes.</p> <p>21 Q Is that correct?</p> <p>22 A Yeah.</p> <p>23 Q You believe the CARD Mortality Study is a case 24 series?</p> <p>25 A I do believe that.</p>	<p style="text-align: right;">Page 164</p> <p>1 And then you can do the -- observe the expected thing if 2 you're just doing comparison of populations or you can 3 have a formal -- formal controlled group.</p> <p>4 Q Okay. Would you agree with me that the work 5 that Dr. Whitehouse has done in connection with this 6 case, none of it is a controlled epidemiological study?</p> <p>7 A Correct.</p> <p>8 Q Okay. In paragraph 16, second sentence, you 9 write "A proper study design must precisely define the 10 hypothesis to be tested and the background rate of 11 disease at issue." Do you see that?</p> <p>12 A Yep.</p> <p>13 Q Do you agree with that?</p> <p>14 A Uh-huh.</p> <p>15 Q Is that a "yes"?</p> <p>16 A That is a yes.</p> <p>17 Q All right; on the next page, there is a table 18 Levels of Evidence and Grading of Recommendations. Oh, 19 sorry, Levels of Evidence and Grading of 20 Recommendations. Do you see that?</p> <p>21 A Yes.</p> <p>22 Q The lowest level of data is data from anecdotal 23 case series.</p> <p>24 A Right.</p> <p>25 Q And would you agree with me that data from a</p>

<p style="text-align: right;">Page 165</p> <p>1 case series cannot be used to prove hypotheses about 2 risk of disease in a population?</p> <p>3 A That's what John Last says. And I've agreed 4 with that multiple times today. However, the American 5 Heart Association table here actually is a stronger 6 statement about the use of case series than the Last 7 thing. I mean, they actually include it as --</p> <p>8 Q They include it as --</p> <p>9 A -- at the very bottom of the barrel.</p> <p>10 THE COURT REPORTER: Whoa; I'm sorry.</p> <p>11 MR. FINCH: Sorry.</p> <p>12 THE WITNESS: I think they include it as 13 the weakest kind of evidence which is actually stronger 14 than what Last says, which I've agreed to 14 times 15 today. So --</p> <p>16 Q Right.</p> <p>17 A So --</p> <p>18 Q So you basically followed the Last, L-a-s-t, 19 this guy's book --</p> <p>20 A Yeah.</p> <p>21 Q -- that you can't make statements about the 22 risk of disease in a population based on a case series; 23 correct?</p> <p>24 A That's -- that's right.</p> <p>25 Q That's your view as an expert in the field of</p>	<p style="text-align: right;">Page 167</p> <p>1 significance to whatever happened; okay? Those I do not 2 have faith in.</p> <p>3 But a case series which is a bunch of them 4 strung together through somebody's clinic, there is 5 something you can learn from those, I believe, because 6 it's more than one simple case.</p> <p>7 Q It's more than one simple case, but it 8 is -- again, a case series is something that you use to 9 create a hypothesis, but it doesn't test the hypothesis 10 or confirm the hypothesis; correct?</p> <p>11 A Correct.</p> <p>12 Q So if the hypothesis is that exposure to Libby 13 asbestos is -- strike that.</p> <p>14 If the hypothesis is that if you have 15 asbestos -- pleural disease caused by exposure to Libby 16 asbestos --</p> <p>17 A Uh-huh.</p> <p>18 Q -- that you have a quantifiable risk of dying 19 from that disease, a case series cannot be used to make 20 a -- to prove that hypothesis.</p> <p>21 A Right; correct.</p> <p>22 Q Okay. So, for example, let's talk about the 23 definition of hypotheses and whether or not 24 Dr. Whitehouse's work or your work has either tested a 25 particular hypothesis or proven a particular hypothesis.</p>
<p style="text-align: right;">Page 166</p> <p>1 epidemiology.</p> <p>2 A That's my view.</p> <p>3 Q Now, paragraph 27 of the same document. You 4 there Dr. Molgaard?</p> <p>5 A Uh-huh.</p> <p>6 Q Is that a "yes"?</p> <p>7 A Yes.</p> <p>8 Q I don't mean to keep pestering you, but it 9 makes it easier on the record.</p> <p>10 A That's all right; I understand.</p> <p>11 Q You write "Similarly, while anecdotal" 12 evidence -- "adverse events reports and/or case reports 13 may give rise to a hypothesis that must be tested, they 14 cannot be used to quantify any possible risk or to 15 determine who in a population may be at risk." I take 16 it you agree with that?</p> <p>17 A Yes.</p> <p>18 Q So a case series cannot be used to quantify the 19 risk of disease; is that correct?</p> <p>20 A Well, I think what I was trying to talk about 21 here was a single case report, not a case series; okay?</p> <p>22 A single case report, often you'll see in the medical 23 literature someone will have a case they found that has 24 some obscure happening in it, and they'll write it up as 25 a case study and claim that there's probably etiological</p>	<p style="text-align: right;">Page 168</p> <p>1 Can we do that?</p> <p>2 A Sure.</p> <p>3 Q Okay. Would you agree with me that a 4 hypothesis is an assertion or a thought that may or may 5 not turn out to be true?</p> <p>6 A Yeah, I can agree with that.</p> <p>7 Q Okay.</p> <p>8 One hypothesis we talked about here today is 9 that Libby asbestos is more likely to cause mesothelioma 10 than chrysotile asbestos. That's a hypothesis.</p> <p>11 A Right.</p> <p>12 Q And so far, neither you nor Dr. Whitehouse has 13 done the work to establish whether or not that assertion 14 is true.</p> <p>15 A Correct.</p> <p>16 Q Okay.</p> <p>17 Another hypothesis that -- or assertion that 18 one could have is that mesothelioma caused by exposure 19 to Libby asbestos is more likely to lead to death than 20 mesothelioma caused by exposure to some other type of 21 asbestos.</p> <p>22 A Yes.</p> <p>23 Q That's a hypothesis.</p> <p>24 A Yes.</p> <p>25 Q And I don't think anybody has even asserted</p>

<p style="text-align: right;">Page 169</p> <p>1 that. But whether they've asserted it or not, neither 2 you nor Dr. Whitehouse has done the work to prove the 3 truth of that hypothesis; correct?</p> <p>4 A Correct.</p> <p>5 Q Okay.</p> <p>6 Another hypothesis you could have is that lung 7 cancer caused by exposure to Libby asbestos is more 8 likely to lead to death than lung cancer caused by 9 exposure to some other type of asbestos; correct?</p> <p>10 A Correct.</p> <p>11 Q And neither you nor Dr. Whitehouse has done the 12 work to prove the hypothesis that lung cancer caused by 13 exposure to Libby asbestos is more likely to lead to 14 death than lung cancer caused by other forms of 15 asbestos.</p> <p>16 A Correct.</p> <p>17 Q Okay.</p> <p>18 Another hypothesis you could have is that 19 asbestosis caused by exposure to Libby asbestos 20 is -- strike that; let me back up.</p> <p>21 Another hypothesis that one could have is that 22 Libby asbestos is more likely to cause asbestosis than 23 exposure to a similar amount of chrysotile asbestos.</p> <p>24 That's a hypothesis one could have; correct?</p> <p>25 A Correct.</p>	<p style="text-align: right;">Page 171</p> <p>1 pleural disease than is exposure to chrysotile asbestos.</p> <p>2 A Correct.</p> <p>3 Q And neither you nor Dr. Whitehouse, nor anybody 4 else, has done the analytic epidemiological work to 5 prove the validity of that hypothesis; correct?</p> <p>6 A Correct.</p> <p>7 Q Another hypothesis that one could have -- first 8 of all, would you agree with me that if you're going to 9 talk about risk of death from a disease or severity of a 10 disease, it's important to distinguish between different 11 types of diseases?</p> <p>12 A Yeah, given the state of the art at the time 13 that you're making the distinction.</p> <p>14 Q Okay. Let's just talk about smoking, for 15 example.</p> <p>16 A Uh-huh.</p> <p>17 Q Smoking is associated with and probably causes 18 a variety of different diseases; correct?</p> <p>19 A Yes.</p> <p>20 Q One of the things that smoking is well 21 established that it causes lung cancer; correct?</p> <p>22 A Yes.</p> <p>23 Q Another thing that smoking causes is emphysema; 24 correct?</p> <p>25 A Yes.</p>
<p style="text-align: right;">Page 170</p> <p>1 Q And neither you nor Dr. Whitehouse, or any 2 other expert in this case, has done the work to prove 3 that that hypothesis is true; correct?</p> <p>4 A Correct.</p> <p>5 Q Okay.</p> <p>6 Another -- another hypothesis that one could 7 have is that asbestosis that is caused by exposure to 8 Libby asbestos is more likely to lead to death than 9 asbestosis caused by exposure to some other type of 10 asbestos.</p> <p>11 A Correct.</p> <p>12 Q And neither you nor Dr. Whitehouse have done 13 the epidemiological or analytical work in order to prove 14 that hypothesis; correct?</p> <p>15 A Correct.</p> <p>16 Q Nor has Dr. Frank; correct? Nobody in this 17 case that you've seen has done that work.</p> <p>18 A I don't believe so.</p> <p>19 Q Okay. And that would be true of my questions 20 about mesothelioma, my questions about lung cancer; 21 correct?</p> <p>22 A Correct; yeah.</p> <p>23 Q Okay.</p> <p>24 Another hypothesis that one could have is that 25 exposure to Libby asbestos is more likely to cause</p>	<p style="text-align: right;">Page 172</p> <p>1 Q Another thing that smoking causes is chronic 2 obstructive pulmonary disease; correct?</p> <p>3 A Yes.</p> <p>4 Q Okay. And so if you're going to make 5 epidemiological assertions about whether smoking is more 6 likely to lead to death by a particular disease, would 7 you agree with me that it's important to define and 8 describe and differentiate between the different 9 diseases that you might be talking about; correct?</p> <p>10 A Yes.</p> <p>11 Q So, for example, the risk of dying from lung 12 cancer is different than the risk of dying from 13 emphysema; correct?</p> <p>14 A Correct.</p> <p>15 Q And the risk of dying from chronic -- COPD. 16 Can we just say COPD to mean chronic obstructive 17 pulmonary disease?</p> <p>18 A Sure.</p> <p>19 Q Is different than the risk of dying from either 20 emphysema or lung cancer; correct?</p> <p>21 A Correct.</p> <p>22 Q So it's important to distinguish between the 23 diseases that you're talking about if you're trying to 24 test or prove hypothesis about probability of death or 25 severity of disease. Would you agree with that?</p>

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<p>1 A Yes.</p> <p>2 Q Okay.</p> <p>3 Would you agree with me that asbestosis, at</p> <p>4 least as defined by the American Thoracic Society, is a</p> <p>5 different disease than is pleural disease?</p> <p>6 A I don't know. I don't know if I would agree</p> <p>7 with that, actually.</p> <p>8 MR. FINCH: Okay; why don't we get the 2004</p> <p>9 ATS statement and go through it.</p> <p>10 Can we mark this as the next exhibit? I think</p> <p>11 it's already been marked as Exhibit 19.</p> <p>12 (Deposition Exhibit No. 19 marked for</p> <p>13 identification.)</p> <p>14 Q (By Mr. Finch) Before we turn to the 2004 ATS</p> <p>15 statement, you had mentioned very early today something</p> <p>16 called a Frye hearing?</p> <p>17 A Yes.</p> <p>18 Q My understanding is -- of a Frye hearing is a</p> <p>19 hearing designed to test whether or not an expert's</p> <p>20 opinion about a subject matter is supported by sound</p> <p>21 scientific principles; is that correct?</p> <p>22 A Yeah. My understanding is it's an evaluation</p> <p>23 of the scientific issues in a legal matter. I think</p> <p>24 it's the same thing.</p> <p>25 Q And so, for example, if someone is going to</p>	<p>1 Q Okay. And the -- on page 697, the ATS talks</p> <p>2 about different nonmalignant disease outcomes. Do you</p> <p>3 see that?</p> <p>4 A Yes.</p> <p>5 Q Okay. And would you agree with me that</p> <p>6 asbestosis is defined as interstitial pneumonitis and</p> <p>7 fibrosis caused by inhalation of asbestos fibers.</p> <p>8 A That's what it says there; right.</p> <p>9 Q Okay. And that's treated as one distinct</p> <p>10 diagnostic entity by the American Thoracic Society;</p> <p>11 correct?</p> <p>12 A I'm not sure. Because on page -- the first</p> <p>13 page they say "Nonmalignant asbestos related disease"</p> <p>14 refers to the following conditions: asbestosis, pleural</p> <p>15 thickening, or asbestos-related pleural fibrosis,</p> <p>16 (plaques or diffuse fibrosis), 'benign' (nonmalignant)</p> <p>17 pleural effusion, and airflow obstruction."</p> <p>18 Q And you don't understand that as describing</p> <p>19 different diseases?</p> <p>20 A Well, it's singular. It says "This statement</p> <p>21 presents guidance for the diagnosis of nonmalignant</p> <p>22 asbestos-related disease. Nonmalignant asbestos-related</p> <p>23 disease," singular, "refers to the following</p> <p>24 conditions:" so --</p> <p>25 Q You have not spent your career studying</p>
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<p>1 testify to -- would you agree with me that the</p> <p>2 hypothesis that exposure to Libby asbestos is more</p> <p>3 likely to cause mesothelioma than exposure to chrysotile</p> <p>4 asbestos is a -- is a proposition that, in order to</p> <p>5 evaluate it, you have to apply the scientific principles</p> <p>6 of epidemiology? At least you should.</p> <p>7 A It would be useful to, yeah.</p> <p>8 Q Okay. And so if someone were to testify that</p> <p>9 Libby -- exposure to Libby asbestos is more likely to</p> <p>10 cause mesothelioma than exposure to some other type of</p> <p>11 asbestos, and they hadn't done the analytical</p> <p>12 epidemiological work to prove that, it would be your</p> <p>13 view, as an expert epidemiologist, that that was not a</p> <p>14 supportable statement; correct?</p> <p>15 A Yeah.</p> <p>16 Q Okay.</p> <p>17 Now, I put before you the 2004 ATS statement.</p> <p>18 A Yes.</p> <p>19 Q Do you see that it says -- first of all, the</p> <p>20 title of it is Diagnosis and Initial Management of</p> <p>21 Nonmalignant Diseases Related to Asbestos.</p> <p>22 A Yes.</p> <p>23 Q And "Diseases" is plural. It's more than one</p> <p>24 disease; correct?</p> <p>25 A Yes.</p>	<p>1 asbestos-related disease; correct?</p> <p>2 A Correct.</p> <p>3 Q And you are not going to be able to testify as</p> <p>4 an expert on asbestos medicine that asbestosis is the</p> <p>5 same disease as pleural disease; correct?</p> <p>6 A Not unless I -- not unless I quote this thing</p> <p>7 here which seems to be saying it's the same thing; a</p> <p>8 series of conditions that are --</p> <p>9 Q You're just reading the language. You haven't</p> <p>10 spent your career treating people with asbestos-related</p> <p>11 disease; correct?</p> <p>12 A No, no.</p> <p>13 Q You don't know the difference -- you haven't</p> <p>14 reviewed -- you certainly haven't -- would you agree</p> <p>15 with me there are literally thousands of articles in the</p> <p>16 medical literature about asbestos-related disease?</p> <p>17 A Yes.</p> <p>18 Q And you certainly haven't gone out and done a</p> <p>19 review of all the literature out there that exists about</p> <p>20 asbestos-related anomaly disease?</p> <p>21 A Absolutely not.</p> <p>22 Q Would you agree with me that there are</p> <p>23 different -- that mesothelioma, for example, and lung</p> <p>24 cancer are different cancers that are caused by</p> <p>25 asbestos?</p>

<p style="text-align: right;">Page 177</p> <p>1 A Yes.</p> <p>2 Q And do you have a view, based on a career 3 in -- in -- do you have a view, based on anything other 4 than just reading this document, as to whether or not 5 asbestosis is a different disease than pleural plaques, 6 for example?</p> <p>7 A My view, from what I have read, and I am not an 8 expert -- not an expert in this field. But from what I 9 have read, pleural plaques are a type of asbestosis.</p> <p>10 Q That's your view.</p> <p>11 A Yeah.</p> <p>12 Q What about diffuse pleural thickening? Is that 13 a type of asbestosis?</p> <p>14 A Of nonmalignant asbestos -- yeah, it says it 15 right here. It's pleural thickening. It says it right 16 here in this expert report.</p> <p>17 Q So it's your view that diffuse pleural 18 thickening is the same disease as asbestosis.</p> <p>19 A I can agree with what's stated here, okay, that 20 "Nonmalignant asbestos-related disease refers to the 21 following conditions: asbestosis, pleural thickening, 22 asbestos-related pleural fibrosis." That, to me, makes 23 some sense. But I totally give to you I am not an 24 expert in this field.</p> <p>25 Q Okay; will you at least agree with me that on</p>	<p style="text-align: right;">Page 179</p> <p>1 the 2004 ATS statement, is different than the definition 2 of pleural disease, what I just read to you.</p> <p>3 MR. HEBERLING: Objection; misstatement of 4 the document. It's not an answerable question. That 5 isn't the definition of pleural disease.</p> <p>6 THE WITNESS: Yeah, I can't really answer 7 that. Could you rephrase that?</p> <p>8 Q (By Mr. Finch) Sure. Would you agree with me 9 that there is a definition of asbestosis in the document 10 that does not include pleural thickening or pleural 11 plaque?</p> <p>12 A There is such a definition, to my way of 13 thinking, in the first item that you pointed out on --</p> <p>14 Q On 697?</p> <p>15 A Yeah.</p> <p>16 Q That defines asbestosis as a particular 17 diagnostic entity; correct?</p> <p>18 A Yeah, I guess.</p> <p>19 Q And that is talking about interstitial fibrosis 20 in the parenchyma of the lung; correct?</p> <p>21 A Right.</p> <p>22 Q You understand that the parenchyma of the lung 23 is the inside of the lung and the pleura is the outside 24 of the lung.</p> <p>25 A Right.</p>
<p style="text-align: right;">Page 178</p> <p>1 page 697 there is a definition of asbestosis that says 2 "Asbestosis is the interstitial pneumonitis and fibrosis 3 caused by inhalation of asbestos fibers"?</p> <p>4 A There is a definition that says that; yeah.</p> <p>5 Q Then on page 702 there is a definition of 6 nonmalignant pleural or abnormalities associated with 7 asbestos.</p> <p>8 A Okay.</p> <p>9 Q Do you see that?</p> <p>10 A Yep.</p> <p>11 Q And it says "Pleural abnormalities associated 12 with asbestos exposure are the result of collagen 13 deposition resulting in subpleural thickening, which may 14 subsequently calcify, and which in the visceral pleura 15 may be associated with parenchymal fibrosis in adjacent 16 subpleural alveoli."</p> <p>17 A Uh-huh.</p> <p>18 Q "Pleural thickening, as a marker of asbestos 19 exposure, has continued to be a prominent feature of 20 exposure to asbestos while other outcomes, such as 21 asbestosis, have become less frequent due to declining 22 exposure levels." Do you see that?</p> <p>23 A Yep.</p> <p>24 Q You would agree with me that at least for 25 purposes of definition, the definition of asbestosis in</p>	<p style="text-align: right;">Page 180</p> <p>1 Q And so that the definition of asbestosis 2 doesn't include disease that occurs on the outside of 3 the lung.</p> <p>4 A Well, I think what I'm beginning to understand 5 is that this document has internal contradictions in it. 6 Because what it said on the second paragraph does not 7 appear to agree with what is said on page 697. I could 8 be misunderstanding it, but it does not seem to be 9 consistent.</p> <p>10 Q If you were to assume that pleural disease is a 11 different -- that asbestos-related pleural disease is a 12 different disease than asbestosis -- I want you to 13 assume that those are two different diagnostic entities 14 for the purpose of my questions.</p> <p>15 A Yes.</p> <p>16 Q Would you agree with me that if you were going 17 to test the hypothesis of whether or not pleural disease 18 caused by exposure to Libby asbestos is more severe than 19 pleural disease caused by exposure to other types of 20 asbestos, it's important to define and distinguish 21 between pleural disease as compared to asbestosis?</p> <p>22 A If that distinction is -- is the one that the 23 American Thoracic Society is operating with. Though 24 from this document, it's very hard to tell that, though 25 I have not read the entire thing.</p>

<p style="text-align: right;">Page 181</p> <p>1 Q All right.</p> <p>2 One hypothesis that one could test is whether</p> <p>3 or not pleural disease caused by exposure to Libby</p> <p>4 asbestos is more likely to lead to death than pleural</p> <p>5 disease caused by exposure to other types of asbestos;</p> <p>6 correct?</p> <p>7 A Correct.</p> <p>8 Q And neither you nor Dr. Whitehouse nor anybody</p> <p>9 else have done the analytical epidemiological work to</p> <p>10 prove whether or not that hypothesis is true; correct?</p> <p>11 A Correct.</p> <p>12 Q So you couldn't say, for example, that someone</p> <p>13 who has pleural disease caused by exposure to Libby</p> <p>14 asbestos is more likely to die than someone who has</p> <p>15 pleural disease caused by some other asbestos; right?</p> <p>16 You couldn't say that, as a matter of epidemiological</p> <p>17 science.</p> <p>18 A I could not.</p> <p>19 Q And Dr. Whitehouse's work doesn't support that</p> <p>20 hypothesis either. You wouldn't agree that, as a matter</p> <p>21 of analytical epidemiology --</p> <p>22 A Yeah.</p> <p>23 Q -- that -- that his work would support that</p> <p>24 hypothesis.</p> <p>25 A Yes, I agree.</p>	<p style="text-align: right;">Page 183</p> <p>1 Q And neither he nor you have done the analytical</p> <p>2 epidemiological work to determine whether that</p> <p>3 hypothesis is true.</p> <p>4 A Correct.</p> <p>5 Q The -- you certainly haven't -- you certainly</p> <p>6 are not prepared to give an opinion, to a reasonable</p> <p>7 degree of certainty as a epidemiology -- as an</p> <p>8 epidemiologist, that the pleural disease caused by</p> <p>9 exposure to Libby asbestos is more severe, in terms of</p> <p>10 loss of lung function, than pleural disease caused by</p> <p>11 other forms of asbestos outside of Libby.</p> <p>12 A Correct.</p> <p>13 Q And in your view as an expert epidemiologist,</p> <p>14 none of the work done by Dr. Whitehouse or Dr. Frank, or</p> <p>15 any other expert in this case, would allow you to prove</p> <p>16 that hypothesis.</p> <p>17 A Not that I'm aware of.</p> <p>18 Q In your expert report, I believe it's Exhibit 2</p> <p>19 to your deposition, do you have that, Dr. Molgaard?</p> <p>20 A Not yet.</p> <p>21 Q If you go to page nine of that report --</p> <p>22 A Uh-huh.</p> <p>23 Q -- you're responding to one of -- is it Mr. or</p> <p>24 Dr. -- Dr. Moolgavkar's comments on Whitehouse's 2004</p> <p>25 paper about progressive loss of lung function. Do you</p>
<p style="text-align: right;">Page 182</p> <p>1 Q Okay.</p> <p>2 And in his CARD Mortality Study, did you</p> <p>3 understand that of the 76 nonmalignant deaths,</p> <p>4 Dr. Whitehouse included people who both had pleural</p> <p>5 disease as well as people who had asbestosis?</p> <p>6 A My understanding was that he was looking at</p> <p>7 asbestosis-related disease, however that is defined.</p> <p>8 Q However he defined it, it included both</p> <p>9 parenchymal disease and pleural disease in his 76</p> <p>10 deaths.</p> <p>11 A I believe he did.</p> <p>12 Q Okay.</p> <p>13 Would you agree with me that in order to draw a</p> <p>14 conclusion from a smaller population and apply it to a</p> <p>15 larger population, the smaller population has to be</p> <p>16 representative of the larger population?</p> <p>17 A I'm not sure if I understand your question.</p> <p>18 Q Let me strike that question and re-ask it.</p> <p>19 One hypothesis that Dr. Whitehouse has raised</p> <p>20 is that pleural disease caused by exposure to Libby</p> <p>21 asbestos is different, in terms of severity of lung</p> <p>22 function loss, than pleural disease caused by other</p> <p>23 forms of asbestos. That's a hypothesis that he has;</p> <p>24 correct?</p> <p>25 A Correct.</p>	<p style="text-align: right;">Page 184</p> <p>1 see that?</p> <p>2 A Yeah.</p> <p>3 MR. HEBERLING: What page is that?</p> <p>4 MR. FINCH: Page nine of Molgaard's report.</p> <p>5 Q (By Mr. Finch) You write "First, the study is</p> <p>6 on 123 subjects who are representative of the asbestos</p> <p>7 disease population." Do you see that?</p> <p>8 A Yeah.</p> <p>9 Q You didn't make any independent assessment of</p> <p>10 whether the 123 patients in the progression study were</p> <p>11 representative of the -- all the people in Libby,</p> <p>12 Montana who have asbestos-related disease, did you?</p> <p>13 A No.</p> <p>14 Q So if, for example, the 123 subjects in the</p> <p>15 2004 paper were, on average, exposed to far more</p> <p>16 asbestos than the average level of exposure for all</p> <p>17 1,800 people in the Libby patient population, then they</p> <p>18 wouldn't be representative -- the 123 wouldn't be</p> <p>19 representative of the disease population of the whole;</p> <p>20 correct?</p> <p>21 A Yes, if you're saying the selection bias code</p> <p>22 still exists.</p> <p>23 Q Okay. You just used a term "selection bias."</p> <p>24 A Yeah.</p> <p>25 Q Explain to me what is selection bias.</p>

<p style="text-align: right;">Page 185</p> <p>1 A That is the people who get into, say in this 2 situation, perhaps these people who come to the doctor's 3 attention and get into his clinical series, select 4 themselves somehow or other. That is, there is -- they 5 show up because they feel worse. They show up because 6 they're closer to the doctor's office. They show up 7 because they've known the doctor who's treated other 8 people who have had the disease. Anything that produces 9 a pressure or bias on people who get to a place, enter a 10 study or enter an analysis, for reasons that you would 11 not normally expect. And bias is defined as any 12 systematic deviation from the truth. So if it's a 13 systematic selection pressure that gets people to his 14 clinical series, you know, then it could be -- it could 15 be that there is such a bias.</p> <p>16 Q Okay; in addition to a selection bias, there 17 can also be things that make the 123 people 18 unrepresentative of the bigger patient population; 19 correct?</p> <p>20 A And the selection bias is what would drive that 21 lack, if it was there. The selection bias would be one 22 of the things that could drive a lack of 23 generalizability.</p> <p>24 Q Okay. But I mean, as I understood when you 25 were saying "selection bias," the example you used was</p>	<p style="text-align: right;">Page 187</p> <p>1 no -- which there is no safe exposure.</p> <p>2 A Right; there are some exceptions, yes.</p> <p>3 Q So the math gets squirrelly when you start 4 putting infinity -- one over zero you get to infinity.</p> <p>5 A It does, yeah.</p> <p>6 Q So leaving mesothelioma aside, the other -- the 7 other asbestos-related diseases are dose response in 8 that the more asbestos you're exposed to, the more 9 likely you are to get an asbestos-related disease; 10 correct?</p> <p>11 A It appears to be that way.</p> <p>12 Q And would you also agree with the proposition 13 that, generally speaking, the more heavily you are 14 exposed, the more severe your nonmalignant disease tend 15 to be. People look at, for example, the insulator as 16 compared to lower exposed coworkers.</p> <p>17 A I guess I would say to that that there 18 are -- the whole arena of exposure in environmental 19 health has been really worked a lot in the last few 20 years. It appears that, you know, a lot of what happens 21 with different kinds of diseases is maybe not the size 22 of the dose, but maybe it's when you are dosed, when in 23 your life span are you dosed. Are you dosed, you know, 24 as an adolescent?</p> <p>25 Q You mean, earlier exposures might be more</p>
<p style="text-align: right;">Page 186</p> <p>1 people felt worse or they were closer to Whitehouse's 2 office. That's one example of a selection bias; 3 correct?</p> <p>4 A Sure.</p> <p>5 Q Another example of selection bias could be if, 6 for example, the 123 patients in the study were far 7 heavier smokers at some point in their life than the 8 1,800 patients that you might want to extrapolate it to, 9 then the 123 wouldn't necessarily be representative at 10 all to what you might expect in the 1,800; correct?</p> <p>11 A It could be.</p> <p>12 Q And if, for example, the 123 patients in the 13 progression study were, on average, exposed to -- would 14 you agree with me that asbestos diseases are dose 15 responsive?</p> <p>16 A By and large, they appear to be.</p> <p>17 Q Meaning that the more asbestos you're exposed 18 to, the more likely you are to contract an 19 asbestos-related disease; correct?</p> <p>20 A Correct.</p> <p>21 Q And that's true for both nonmalignant diseases 22 and asbestos-related cancers.</p> <p>23 A I believe that is true.</p> <p>24 Q Although, for mesothelioma, there is -- they 25 haven't really defined a threshold below which there is</p>	<p style="text-align: right;">Page 188</p> <p>1 dangerous than later exposures.</p> <p>2 A Yeah, exactly. So it may not be just the 3 cumulative exposure, it may be when. A fair amount of 4 study coming out of the National Study of Environmental 5 Health is showing fairly persuasively that a lot of 6 chronic diseases appear to be related to in utero 7 exposures. So it's like, you know, are you exposed in 8 utero, and that could be something that drives the 9 disease pattern of diabetes in your thirties.</p> <p>10 Q Um --</p> <p>11 A So that's a long answer. Because really what 12 I'm just trying to say is it's more than just dose. 13 Dose itself is very important. But it could be when you 14 are dosed.</p> <p>15 Q Okay. But if, for example, the 123 patients in 16 the progression study, if the vast majority of them were 17 miners who were exposed to a lot more asbestos on 18 average than the rest of the 1,800 patient population, 19 it may well be that the progression of lung function 20 decline you saw in the 123 would not be predictive of 21 what you would see in the bigger population.</p> <p>22 MR. HEBERLING: Objection; outside his area 23 of expertise.</p> <p>24 THE WITNESS: I didn't really understand 25 the question anyway, so....</p>

<p style="text-align: right;">Page 189</p> <p>1 Q (By Mr. Finch) Okay. In order for the -- in 2 order for you to make any extrapolation from the 123 to 3 the bigger patient population, you would have to -- the 4 123 would have to be representative of the bigger 5 patient population on every variable that matters for 6 lung function decline; correct?</p> <p>7 A Ideally, yes.</p> <p>8 Q Okay. And you haven't done anything to assess 9 whether there are variables about those 123 subjects 10 that are different as it relates to the things that 11 might cause lung function decline. You haven't done 12 that.</p> <p>13 A No, I have not.</p> <p>14 Q Okay.</p> <p>15 Last defines the power of a study as the 16 ability of a study to demonstrate an association, if one 17 exists.</p> <p>18 A Right.</p> <p>19 Q Could you put that into layman's terms? What 20 does that mean?</p> <p>21 A It's the amount of surety you have that you 22 have actually found something and that there really is 23 something going on in your study and it's not just 24 something could happen by chance; okay? It's -- it has 25 to do with type one, type two errors when you're doing</p>	<p style="text-align: right;">Page 191</p> <p>1 going to come up 70 percent heads and 30 percent tails; 2 correct?</p> <p>3 A Yeah.</p> <p>4 Q And so with a study that has much less 5 statistical power, you might draw invalid conclusions 6 just because the study doesn't have enough power to weed 7 out random events; correct?</p> <p>8 A Yeah.</p> <p>9 Q Okay.</p> <p>10 Dr. Whitehouse's progression study was looking 11 at a subset of his total patient population. His total 12 patient population is 1,800 people; right?</p> <p>13 A Right.</p> <p>14 Q And of those 1,800, we've got the medical 15 records of about a thousand of them that were produced; 16 correct?</p> <p>17 MR. HEBERLING: Objection; misstatement of 18 the record.</p> <p>19 MR. FINCH: Have you produced the medical 20 records for all 1,800 people?</p> <p>21 MR. HEBERLING: You're talking about the 22 Whitehouse progression study.</p> <p>23 MR. FINCH: Yes.</p> <p>24 MR. HEBERLING: The client number at that 25 time was 491.</p>
<p style="text-align: right;">Page 190</p> <p>1 inferential testing. And power is one minus beta or one 2 minus type two error. And it's rather complicated and 3 boring. But basically what it amounts to is that there 4 is -- it gives you a probability that what you are 5 finding is really there.</p> <p>6 Most studies of analytic type will look 7 at -- will want a power of one minus beta probability of 8 80 to 90 percent. And so you then generate a sample 9 that gives you that much power.</p> <p>10 Q I've sort of always thought it was power as a 11 statistical concept in the sense that if you have an 12 observation of ten events, that's a much less powerful 13 study than if you have an observation of a thousand 14 similar events; correct?</p> <p>15 A Yeah.</p> <p>16 Q So, for example, if you wanted to -- if you 17 wanted to make conclusions about the probability of 18 flipping a coin and how often it's going to be heads 19 versus how often it's going to be tails, if you did a 20 study with only ten flips, that's far less powerful than 21 a study that has a thousand flips; correct?</p> <p>22 A That's a good way -- yeah, that's fine.</p> <p>23 Q So, for example, if you flip a coin ten times, 24 you might come up seven heads and three tails. Whereas 25 if you did it a thousand times, the odds are you're not</p>	<p style="text-align: right;">Page 192</p> <p>1 MR. FINCH: I understand that.</p> <p>2 Q (By Mr. Finch) But of the -- there are 1,800 3 people who live in and around Libby who have been 4 diagnosed with asbestos-related disease, correct, 5 Dr. Molgaard? That's your understanding?</p> <p>6 A Yeah.</p> <p>7 Q The 123 patients are -- obviously, it's a much 8 smaller number of people than either 900 or 1,800; 9 correct?</p> <p>10 A Right.</p> <p>11 Q So would you agree with me that if you -- and 12 would you agree with me that what Whitehouse did in the 13 2004 paper was what some -- he did an analysis of change 14 in lung function over time between point A and point B?</p> <p>15 A Right.</p> <p>16 Q And the time period was about three years, on 17 average?</p> <p>18 A Right.</p> <p>19 Q Okay. Would you agree with me that, as a 20 matter of statistics, a study that analyzes lung 21 function decline in 123 people over a three-month (sic) 22 period of time is much less powerful than a study that 23 would examine lung function decline in 900 people with 24 asbestos-related disease over a five-to-seven-year 25 period of time?</p>

<p style="text-align: right;">Page 193</p> <p>1 A I would not agree with you, because the issue 2 is where does the concept of statistical power apply. 3 And by and large, it does not apply to descriptive 4 studies. It applies to analytical studies or clinical 5 trials.</p> <p>6 Q Okay; I'm glad you mentioned that. A 7 descriptive -- you could not use the results of a 8 descriptive study to say -- to make predictions about 9 the outcomes of a disease in a larger population; 10 correct?</p> <p>11 A Could not use it to do what?</p> <p>12 Q To make a prediction about the disease 13 progression in a bigger population.</p> <p>14 A I would not think so, because I think that 15 that's -- what you're really doing is you're 16 using -- you are explaining what's going on within this 17 case series.</p> <p>18 Q Right; you're explaining -- you're saying 19 you've got these 123 people, and 76 percent of them 20 showed a lung function decline over a three-year period 21 of time; correct?</p> <p>22 A Right.</p> <p>23 Q You could not, as a matter of analytic 24 epidemiology, say that because I observed that in these 25 123 people, therefore, there is a 76-percent chance that</p>	<p style="text-align: right;">Page 195</p> <p>1 anywhere in your expert witness report any analysis or 2 discussion or criticism of the W.R. Grace bankruptcy 3 trust distribution procedures.</p> <p>4 A I know almost nothing about that.</p> <p>5 Q Okay. You said you reviewed Dr. Whitehouse's 6 report and you commented on certain aspects of his 7 report --</p> <p>8 A Uh-huh.</p> <p>9 Q -- but am I correct that you have not been 10 asked to analyze or review or have any opinions about 11 the medical or exposure criteria in the Grace TDP?</p> <p>12 A That's correct.</p> <p>13 Q So you're not vouching for Dr. Whitehouse's 14 views -- you're not vouching for or critiquing the 15 medical and exposure criteria in the TDP in any way.</p> <p>16 A That's correct.</p> <p>17 Q Okay.</p> <p>18 And then Mr. Whitehouse -- excuse me. I've 19 been traveling a lot lately. I just slandered 20 Dr. Whitehouse and Mr. Heberling as to which I'm both 21 sorry.</p> <p>22 But Mr. Heberling --</p> <p>23 MR. HEBERLING: I don't -- well, anyway, 24 you said "Mr. Whitehouse." You didn't say anything 25 about Dr. Heberling which would be slander.</p>
<p style="text-align: right;">Page 194</p> <p>1 anybody who has an asbestos-related disease in Libby 2 will also suffer a lung function decline.</p> <p>3 A That would be a hypothesis to be tested, I 4 believe.</p> <p>5 Q And nobody's done the work in this case to 6 prove the hypothesis that every -- or anybody with 7 asbestos disease in Libby has a 76-percent chance to 8 have a loss of lung function.</p> <p>9 A Not to my knowledge.</p> <p>10 Q Okay.</p> <p>11 And nobody has done the epidemiological work to 12 prove the hypothesis that anybody who has an 13 asbestos-related disease in Libby has a 59-percent 14 chance of dying; correct?</p> <p>15 A Done the work in terms of analytic 16 epidemiology, no, not to my knowledge.</p> <p>17 MR. FINCH: Okay; this would be a good time 18 to take a little break. I'm getting close to done.</p> <p>19 VIDEO TECHNICIAN: Off the record, then, 20 it's 3:06.</p> <p>21 (Deposition in recess from 3:06 p.m. to 22 3:10 p.m.)</p> <p>23 VIDEO TECHNICIAN: We're back on the 24 record. The time is 3:10.</p> <p>25 Q (By Mr. Finch) Dr. Molgaard, I didn't see</p>	<p style="text-align: right;">Page 196</p> <p>1 MR. FINCH: I was thinking about you and 2 I -- Whitehouse is a doctor, obviously. Mr. Heberling 3 is a very fine lawyer.</p> <p>4 Q (By Mr. Finch) Mr. Heberling sent me an 5 e-mail, along with other people, on Saturday that talks 6 about paragraphs 44, 45, and 48 of Dr. Whitehouse's May 7 2009 report. And I think that report was marked as one 8 of --</p> <p>9 A That's 5, Exhibit 5.</p> <p>10 Q -- Exhibit 5. And this is where he's 11 describing the mesothelioma cases in Libby as compared 12 to the Libby's average population versus the 13 mesothelioma cases around the Manville plant.</p> <p>14 A Uh-huh.</p> <p>15 Q Again, this analysis in paragraphs 44 and 45 is 16 a matter of descriptive epidemiology; correct?</p> <p>17 A Correct.</p> <p>18 Q So you cannot, from that, make any causal 19 connection as to whether exposure to amphiboles in Libby 20 is more or more -- more or less likely the cause of 21 mesothelioma than exposure to asbestos around Manville, 22 New Jersey; correct?</p> <p>23 A Um --</p> <p>24 Q Let me withdraw that question and rephrase it.</p> <p>25 You don't know what kind of asbestos</p>

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1 exposures -- the paragraphs 44 and 45 do not allow one
2 to test the hypothesis as to whether exposure to Libby
3 asbestos is more or less likely to cause mesothelioma
4 than exposure to other types of asbestos; correct?

5 **A** Correct.

6 **Q** And similarly, paragraph 48, this is describing
7 the ATSDR study and mortality in Libby, Montana?

8 **A** Yes.

9 **Q** Do you see that?

10 **A** Uh-huh.

11 **Q** This paragraph doesn't attempt to make any
12 comparison between the ability of amphibole asbestos
13 from Libby to cause asbestosis as compared to other
14 types of asbestos fibers that cause asbestosis.

15 **A** Correct.

16 **MR. FINCH:** I believe I'm done; pass the
17 witness.

18 **MR. HEBERLING:** All yours, Dale.

19 **MR. COCKRELL:** No questions.

20 **MR. FINCH:** Does anybody on the telephone
21 have any questions?

22 **MR. HEBERLING:** Is anyone on the telephone?

23 I think we woke somebody up. I heard something.

24 **THE WITNESS:** I heard a choking noise.

25 **MR. HEBERLING:** So I will reserve my

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1 questions to the time of trial.

2 **MR. FINCH:** Okay.

3 You have the right to read and sign. I'm sure
4 you know all about that. So this deposition is
5 concluded.

6 **VIDEO TECHNICIAN:** This ends the
7 deposition. The time is 3:15.

8 (Deposition concluded at 3:15 p.m.; witness
9 excused, signature reserved.)

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1 REPORTER'S CERTIFICATE

2 I, Bambi A. Goodman, CSR, RPR, CRR and Notary

3 Public in and for the State of Montana, residing in
4 Whitefish, Montana, do hereby certify:

5 That I did report the foregoing videotaped
6 deposition after having duly sworn CRAIG MOLGAARD, Ph.D.
7 to the truth; that the deposition was taken at the time
8 and place stated on the caption hereto; that the
9 testimony of the witness was taken in shorthand by me
10 and subsequently reduced to writing under my direction;
11 that the foregoing is a true and correct transcript of
12 the testimony given by the witness;

13 I further certify that I am not counsel,
14 attorney nor relative or employee of any party, nor
15 otherwise interested in the event of this suit.

16 IN WITNESS WHEREOF, I have hereunto subscribed
17 my name and affixed my seal of office this 29th day of
18 June, 2009.

19
20
21
22
23 Bambi A. GOODMAN, CSR, RPR, CRR and
24 Notary Public, State of Montana
Residing at Whitefish, Montana
My Commission expires 3/21/10
25

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